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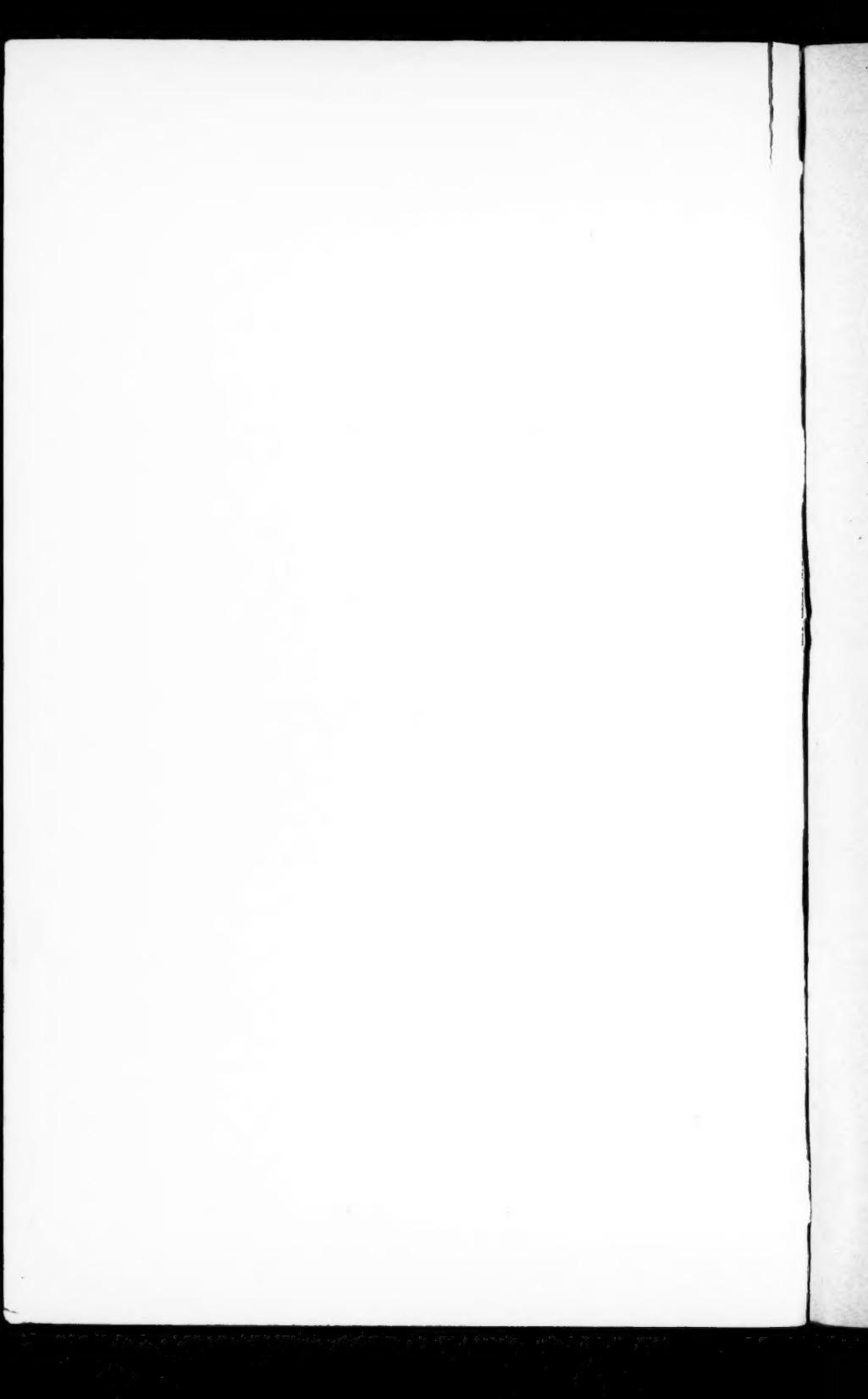


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INTRODUCTION

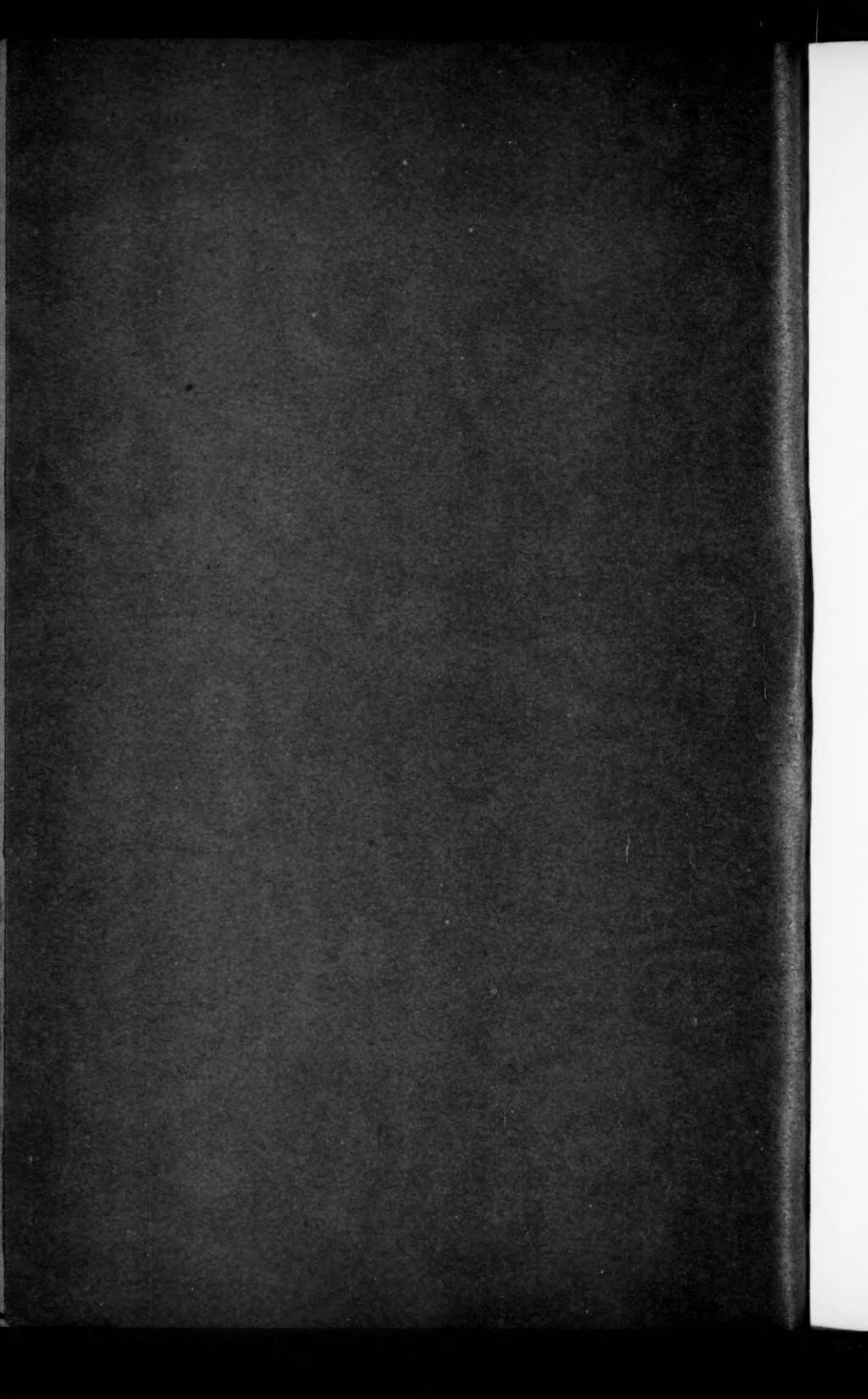
The Command and General Staff School, Fort Leavenworth, Kansas, resumes a mailing-list, suspended for some years, with this issue of the *Review of Military Literature*. This publication, however, has been in circulation for several years, primarily for the use of instructors; it is believed that the qualities which made it useful for instructors are of equal benefit to students and graduates.

The intellectual orientation of this School is progressive and aims at the utilization of every modern tendency, abroad and at home. Close observation of foreign military thought is especially important, since we are handicapped by relatively small peace-time organizations and can not have the opportunities for training and experimentation afforded by the huge military establishments maintained abroad.

This "Review" has been developed in the last three years to follow foreign intellectual tendencies and professional practices, by a systematic review of the leading magazines and periodicals, by furnishing (a) brief digests of contents, (b) abstracts of the more important articles, (c) selected book reviews, and (d) a general cumulative subject index.

It should be noted that the subscription price is very low and represents only the actual cost of material; the extensive contributions are voluntary without remuneration of any kind. It is hoped that this effort will assist graduates to keep abreast of rapidly changing modern conditions on the general academic foundation which this institution has given them.

W. B. BURTT,
Colonel, Infantry,
Assistant Commandant.



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REVIEW OF MILITARY LITERATURE

*THE COMMAND AND GENERAL STAFF SCHOOL
QUARTERLY*

MAJOR C. A. WILLOUGHBY, *Editor*
CAPTAIN FRED DURING, *Associate Editor*

FOREWORD

The object of this publication is a systematic review of current military literature, through cataloging articles of professional value, in selected military and naval periodicals, in the domestic and foreign field.

Articles from foreign periodicals are treated by translations of titles and digests of contents; material of particular importance is covered more extensively in a Section of "Abstracts of Foreign-language Articles."

A "Book Review" Section contains reviews of outstanding books, recently accessioned, which are of particular professional significance.

This material is published as a guide to modern military tendencies and to inspire vigorous thought on the subjects treated. The opinions expressed by authors are not necessarily official.

*PUBLISHED QUARTERLY BY
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LIST OF OFFICERS CONTRIBUTING TO THIS NUMBER

	A	B	C	D	E	F
(1) Briscoe, Lt.Col. N.B.	1					
(2) Bullard, Maj. P.C.	1					
(3) During, Capt. F. (Librarian)	9	29	2		7	
(4) Heflebower, Lt.Col. R.C.					1	
(5) Johnston, Maj. E.S.					2	
(6) Meyer, Maj. V.				1		
(7) Miller, Col. T.					1	
(8) North, 1st Lieut. T.				2		
(9) Short, Capt. J.C.				1		
(10) Taylor, 1st Lieut. M.D.	3					
(11) Watson, Capt. J.T., Jr.						1
(12) Wheeler, Lt.Col. W.R.	1					
(13) Willoughby, Maj. C.A.	2		1		1	
(14) Woodbury, Lt.Col. E.N.					1	

A—Foreign-Language Periodicals; B—English-Language Periodicals;
 C—Abstracts of Foreign-Language Articles; D—Foreign-Language Book
 Reviews; E—English-Language Book Reviews; F—Original Studies.

Lt.Col. N.B. Briscoe: *Revue de Cavalerie* (March-April 1934).

Maj. P.C. Bullard: *Revue du Génie Militaire* (March-April 1934).

Capt. F. During: *Esercito e Nazione* (January, February, March 1934); *Kraftzug* (January-December 1933, inclusive); *Militärwissenschaftliche Mitteilungen* (January, February, March 1934); *Militär-Wochenblatt* (11 March-June 1934, inclusive); *Pioniere* (February 1934); *Revue d'Infanterie* (December 1933); *Rivista di Artiglieria e Genio* (January, February, March 1934); *Wehr und Waffen* (January, February, March 1934); *Wissen und Wehr* (February, March 1934).

1st Lieut. M.D. Taylor: *Revista del Ejercito y de la Marina* (February, March 1934); *Revue de l'Armée de l'Air* (January, February, March 1934); *Revue d'Artillerie* (January, February, March 1934).

Lt.Col. W.R. Wheeler: *Revue d'Infanterie* (January 1934).

Maj. C.A. Willoughby: *Bulletin Belge des Sciences Militaires* (January, February, March 1934); *Revue Militaire Francaise* (January, February, March 1934).

Section 1
ORIGINAL MILITARY STUDIES

This section contains original contributions by graduates of The Command and General Staff School.

**A CRITICAL ANALYSIS OF NIGHT ATTACKS BY BRITISH
TROOPS IN THE WORLD WAR**

By Captain J. T. Watson, Jr., Signal Corps

INTRODUCTION

Night attacks will probably be more frequent in future conflicts, owing to the power of modern armaments. The night attack is generally recognized as a difficult operation which has its own particular problems. However, in view of the developments in material means, it is a subject that deserves increasing consideration.

The object of this study is to present British night attacks on the different fronts of the World War, and in as far as possible to cover all periods of that war. Each of the attacks listed is analyzed as completely as the available information permits. An endeavor is made to draw conclusions from a comparison of these analyses with particular attention to the American doctrine of night attacks.

SOURCES

The chief source of material was the *Official History of the World War* (British). This work, consisting of sixteen volumes, is based on official documents by direction of the Historical Section of Imperial Defense. At present this source is not complete, but its compilation is being continued. For instance, the volumes covering the 1917-18 period of the War have not been printed, and the lack of this material was a definite handicap in this particular study. It should be noted that most of the cases of night attacks were secured from this single source.

The advantage of obtaining material for a research from a variety of sources is unquestioned as the accuracy of state-

ments and the bias of the author which could affect facts can be checked. However, the *Official History of the World War*, based upon official documents and compiled by not one but several writers, is considered an especially trustworthy, meritorious piece of work. Detailed maps of the operations are presented showing front lines before and after the attacks. Copies of orders to the troops are included in some cases, thereby giving a verification on certain phases of the battles. In the more important operations enemy accounts from official sources are added. Misrepresentation of the main events would be almost impossible, especially when the history carries through a theater of war continuously. In order to show succeeding battles, previous ones must be pictured with at least fair accuracy. It would seem that the Official History is unusually careful in its portrayal of the facts as they occurred. There may be a tendency to overlook faults and deal lightly with offending commanders, but this is a fault of omission and not of commission, for results are shown even though the blame is not placed. A thoughtful reading of the sixteen volumes of the British Official History impresses one with the accurate, fair and intelligent presentation of the material by the authors who are trained military men.

All available copies of the British Official History, i.e., those copies in The Command and General Staff School Library, were reviewed. Every case of a British night attack that gave any details with which to work is included in this analysis. This large number of cases from separate volumes compiled by different men should be a strong factor in minimizing any possible objection due to limited source of material.

The *Official History of Australia in the World War* was used as a further source of material. This series of volumes is similar to the British History in method of compilation and plan of presentation. However, it is not as well organized and the maps are not as complete. It does not include copies of orders. It, therefore, becomes a somewhat rambling presentation with more emphasis on the individual soldier and his problem and less on the professional point of view.

Sources other than these two official histories were reviewed but were found to contain little or no material of value. When an occasional case was discovered, it was usually based on the British Official History (which was given as reference

should further details be desired). Only two cases are listed which were secured from sources other than the two histories mentioned.

METHOD OF ANALYSIS

The principles and doctrines as covered by our *Field Service Regulations* (paragraphs 557-566, inclusive) and as further amplified in *Tactical Principles and Decisions*, The Command and General Staff School (1930), Chapter XXI, are the basis for the analysis. They are a convenient unit of measure. Furthermore, their use provides a check or verification of the soundness and relative importance of these principles.

Paragraph 577, *Field Service Regulations*, states that night attacks are conducted to secure surprise and to minimize losses. Night attacks are characterized by decreased effectiveness of armed fire, increased importance of close combat weapons, particularly the bayonet, difficulty in movement and control, more highly sensitive morale, and limited objectives. There is always an element of chance, difficulties increase with the size of command, and decision should be made in time for necessary preparation and daylight reconnaissance. Orders should possess more than usual definiteness and should provide that forces be reorganized promptly upon capture of the position to meet possible counterattacks. But surprise is the most essential element.

Therefore, a night attack should be conducted on a limited scale with a limited objective and should be carefully planned. But above all, surprise is the prime consideration.

A study of the defensive measures taken by the enemy to meet the British night attacks is included in this research. *Field Service Regulations* (par. 566) specifies that vigilant out-guards, active patrols, and illumination must be relied upon in defense. Further, fixed weapons are used to break up the assaults without long range infantry fire, with the bayonet as the important weapon. Positions are usually occupied in greater density at night.

With one exception night raids are not included in this study. An operation which aims to retain captured ground is considered an attack, but one which does not plan to retain secured ground is a raid. However, the raid presented was

a model of its kind and possessed most of the features desirable for a successful night attack.

CASES

The forty-four cases of British night attacks, which form the basis for this study, are shown in detail on the attached form. This chart indicates to what extent the principles considered previously have been observed or ignored. Data concerning the time and place of operations, units engaged, the reason for the attack, the degree of success obtained are included, together with remarks on the operations.

In amplification of this chart the following comments on the different cases contain brief reference to matters of particular importance and to details not included in the chart. The writer's opinion has been added in a number of the comments.

Case 1.—Attack of the 2d and the Meerut Divisions, 15 May 1915, Festubert, France.¹

Two attacks (Battle of Aubers Ridge, 9 May) in this vicinity had been unsuccessful and the British had suffered heavy casualties (over eleven thousand officers and men). The German positions were well organized, their machine guns skillfully placed, and the available British artillery shell was limited in quantity and much of it inferior in quality. A night assault on a wide front was first considered, but on 9 May was rejected as "it would have to be carried out by fresh troops who did not know the ground." The limitation of frontage indicates an appreciation by the British High Command of the importance of reconnaissance. The units chosen for the attack were well acquainted with the terrain.

A diversion on the left flank by the Jullundur Brigade by artillery and machine gun fire had unfortunate results. This brigade opened "fire in controlled bursts of five minutes duration, at 8:45 PM, 9:30 PM, 10:00 PM and 10:30 PM." "This abnormal procedure" put the Germans on the alert in front of two of the brigades who were to participate in the attack. British working parties were observed laying light bridges over the dyke in front of the position, and when "the

¹*British Official History of the War, Military Operations, France and Belgium, 1915, Vol. IV. Pages 16 to 41, and 50 to 56, Appendices 9 to 12.*

Original Military Studies

British field batteries lifted the enemy opened heavy machine gun and rifle fire in anticipation of the attack."

The long artillery preparation, two and one-half days, prevented any great degree of surprise. "The element of surprise is now absent" (page 51, letter GHQ to General Haig, 14 May 1915). However, by varying rates of fire and concentrations it was hoped to secure some deception. The attack of two of the brigades was anticipated by the enemy and as a result heavy casualties were suffered, and their objective was not secured. The third brigade operating with surprise was successful.

The British (First Army) were "far superior to the hostile forces . . . the enemy has suffered heavy losses . . . has few or no reserves" (page 9, letter Sir John French to General Haig, 11 May 1915).

The detail with which this case is presented, the inclusion of orders in the appendix and the size of effort furnish a complete picture of a large attack of particular value for study and illustration. This is a striking example of the importance of surprise with a contrast shown of success and failure.

Case 2.—Battle of Neuve Chapelle, France, evening 10 March 1915.²

The Indian and IV Corps had successfully advanced during the day on a front of some 4,000 yards to a maximum depth of 1,200 yards. The attack on the evening of 10 March should have been launched according to the plans at an earlier hour in the afternoon with considerable leeway of daylight to push the attack home. However, delays consequent to operation and a cloudy sky with early darkness resulted in the operation taking place after dark.

The attack of the Indian Corps had some of the characteristics of a pursuit by direct pressure. Although the objective was captured it was not held. The attack was a partial success and enabled the brigade on the right to secure the enemy trenches on its front (400 to 500 yards) against little resistance.

This same night several other units endeavored to advance but were stopped with considerable confusion by enemy fire.

²*British Official History of the War, Military Operations, France and Belgium, 1915, Vol. III. Pages 106 to 114.*

Although few details were given, evidently the cause of the difficulty was the lack of surprise.

This case is an example of an accidental night attack, and it is believed to have but little value for further study.

Case 3.—Attack of the 13th Brigade at Hill 60, Ypres, France, 17 April 1915.³

This artificial mound of earth on top of the ridge south-east of Ypres provided commanding observation in all directions but particularly to the north and the northwest. It had been captured by the Germans on 10 December 1914.

Initially only a raid had been considered but later plans were changed to provide for retention of the hill. The operation was very carefully worked out, and the troops were moved to the rear for training.

The attack was a complete surprise, as only a company of German infantry occupied the hill at the time of the assault. The practically simultaneous explosion of five mines, containing some 9,400 pounds of powder and 500 pounds of gun cotton, demoralized the Germans in possession of the hill. The attack was not preceded by an artillery preparation but was strongly supported by artillery.

This case is interesting because of the effective use of mines and its complete success.

Case 4.—Midnight counterattack of the 10th and 16th Canadian Battalions, Kitchener's Wood, France, 22 April 1915.⁴

The *Official History* gives but a brief account of this counterattack executed as the result of a request by the French on the left. The initial advance on 22 April of the Germans was based on the use of gas—"The first gas attack." The units participating in the counterattack against this advance had been in division reserve. It is assumed that plans were made by these units for possible use in counterattack. "It (the counterattack) had complete success" but "the ground regained could not be maintained" and withdrawal was necessitated by the lack of effort by the French.

³*British Official History of the War, Military Operations, France and Belgium, 1915, Vol. III. Page 168.*

⁴*British Official History of the War, Military Operations, France and Belgium, 1915, Vol. III. Page 185.*

Original Military Studies

*Case 5.—Attack at Pozieres, France, by the Australian 1st Division, 23 July 1916.*⁵

Pozieres is located on ground commanding observation in all directions and was regarded as a key position. A number of previous assaults had failed. Current opinion favored a night attack where heavy machine gun fire was expected, and the objective was well marked and close.

The men in the first wave wore white, those in the second wave blue, and those in the third wave green ribbons on left shoulders for identification. In addition each soldier had a square of pink cloth on his tunic between the shoulder blades.

Though the enemy must have seen some of the troops concentrated in forward positions, they did not become generally alarmed. The long artillery bombardment (four days), coupled with observed reconnaissance, had given the Germans an indication of the proposed attack. Further, a number of prisoners were taken by the Germans. However, the immediate artillery preparation limited to a two-minute concentration on the enemy's front trenches followed at once by the assault apparently was somewhat of a surprise to the Germans. The attack, though successful, met with stiff resistance in its later stages and the Australians were not able to secure all of their final objectives.

*Case 6.—Attack at Pozieres, France, 25 July 1916.*⁶

This operation was a continuation of the night attack on 23 July (Case No. 5). It was made in place of a day attack for the same reason, namely a strong enemy position with commanding observation.

The attack was not a complete success. Although the forces advanced, the objective was not reached on the entire front. Though surprise was secured, the Germans had planned a counterattack to re-take ground lost on 23 July and had a regiment well forward. This incident was responsible, it is believed, for the lack of complete success. Although surprised, the German dispositions were favorable to meet the Australian attack.

⁵*Official History of Australia in the War, 1914-1918, Vol. III. Pages 464 to 525.*

⁶*Official History of Australia in the War, 1914-1918, Vol. III. Pages 558 to 587.*

*Case 7.—Attack at Pozieres Heights, France, 4 August 1916.*⁷

This attack, the second by the 2d Australian Division, unlike the first, was successful. A six-day period elapsed between the issue of orders and the attack, giving adequate time for preparation. Extensive reconnaissance of the terrain was carried out and considerable use was made of aerial photographs. Great pains were taken in the artillery bombardment preceding the attack to deceive the enemy by changing the periods and rates of fire. This measure achieved some success as the Germans were evidently uncertain as to British plans. The time of attack was set for an early hour in the night so that final preparation could be made during daylight. This change in time ("new departure") probably assisted in securing surprise.

The early hour of the attack necessitated movement during daylight, but approaches were such that this was accomplished without being observed by the enemy.

It is interesting to note that in the second attack surprise was secured and the engagement was successful, whereas the same division in its first attack lacked surprise and failed.

The *German Official History* makes the following comment: "It appears almost incomprehensible that the English (*i.e.*, the Australians) did not take advantage of the result attained. They would have been able to thrust deep into our hinterland without coming up against any considerable resistance, for troops who had received the alarm were not in position." However, the reason no penetration was attempted was due to the narrowness of the front of the attack which obviously rendered further effort hopeless.

Every leader of the Allies recognized that a staggering blow had been given the enemy by this night attack.

*Case 8.—Attack at Mouquet Farm, France, 8 August 1916.*⁸

The 15th Battalion (Anzac) attacked in conjunction with the 7th Suffolk Battalion. The Australian battalion had better going, apparently securing surprise and was successful. The attack of the Suffolk Battalion probably lacking surprise

⁷*Official History of Australia in the War, 1914-1918*, Vol. III. Pages 644 to 699.

⁸*Official History of Australia in the War, 1914-1918*, Vol. III. Pages 726 to 739.

Original Military Studies

met stiff opposition and was unsuccessful. (The *Australian History* gives few details on the operation of the Suffolk Battalion.)

*Case 9.—Attack at Mouquet Farm, France, 9-10 August 1916.*⁹

This night attack was a continuation of the attack on the previous night. This operation illustrates a well-organized assault with surprise. The use of colored lights, shaded from the enemy by being embedded by scooped out earth, and a different color for each company showed the troops the way through No Man's Land. Previously the Australians had had difficulty by losing their direction and route during night attacks and had become hopelessly bewildered and confused. This method of marking the direction with lights was a very definite element in maintaining the order and morale of the troops.

*Case 10.—Attack at Mouquet Farm, France, 12 August 1916.*¹⁰

This was a combined operation by British and Australian troops and one of a number of night attacks with practically the same objective. It was ordered on 10 August, and the objectives given were based upon faulty information as to the location of the front line. Orders to subordinate units were delayed and did not reach companies participating in the assault until 7:00 PM. Attack orders failed entirely to reach some of the platoons.

Disclosure of the preparation during the afternoon for the attack eliminated the factor of surprise, and stiff resistance was met. The attack is classed as a partial success only because of the extremely limited nature of the given objectives.

*Case 11.—Attack at Sari Bair (Lone Pine) Gallipoli, 6 August 1915.*¹¹

This is one of the two attacks made by the 1st Australian Division the night 6-7 August 1915. The other attack by

⁹*Official History of Australia in the War, 1914-1918*, Vol. III. Pages 740 to 744.

¹⁰*Official History of Australia in the War, 1914-1918*, Vol. III. Pages 750 to 757.

¹¹*British Official History of the War, Military Operations, Gallipoli, Vol. II and Appendices.* Pages 178 to 186.

the 2d Brigade made no progress and details are not given in the *Official History*.

The 1st Brigade attacked on a narrow front (220 yards) with three battalions in the assault wave and one battalion in reserve. It was a complete surprise, and the objective was secured with few losses. However, heavy casualties were incurred later when the Turks "delivered a long succession of fierce bombing attacks" (counterattacks), but without success.

The characteristic feature of this case was the use of tunneled routes of approach to the points of departure.

Case 12.—Landing at Suvla, Gallipoli, 6-7 August 1915.¹²

This landing on an enemy shore under cover of darkness is a different type of attack than those heretofore considered. In the face of objections offered by the naval contingent, the principal landing was attempted at Suvla Bay, where the presence of rocks was suspected. The landing made at a beach south of the bay favored by the navy secured surprise and moved forward with no opposition in the vicinity of the shore. The landings in the bay were hampered by shoal rocks and enemy resistance. A rising moon aided the defendants, and the white identification marks on the arms and caps of the landing troops seemed to help enemy snipers. Extreme difficulty was encountered in the effort to maintain signal communications with the commander of the force, and delays in transmission of messages caused serious delays in operations.

This case illustrates the difficulty of landing on a hostile shore, and the effect of accidents caused by terrain features.

Case 13.—Attack at Bait Isa, Mesopotamia, 15 April 1916.¹³

This operation was made within the minimum amount of time as orders were issued at 9:00 PM, 14 April for an attack at 4:45 the next morning. But the troops were familiar with the ground and had made numerous reconnaissances.

The commander evidently intended to make an attack at dawn, but a thunderstorm delayed daylight. With intense

¹²*British Official History of the War, Military Operations, Gallipoli, Vol. II. Pages 223 to 244.*

¹³*British Official History of the War, Mesopotamia Campaign, Vol. II. Pages 401 to 404.*

darkness the companies had to rely upon compasses for direction. But the rifles and bayonets tended to affect the compasses and make them incorrect. This led to considerable confusion and loss of direction.

The rain may have helped as it apparently made the enemy outguard take cover. So the attack was a complete surprise and was successful.

Case 14.—Passage of the Adhaim, Mesopotamia, 18 April 1917.¹⁴

The trench organization of the Turks indicated that they expected the attack to come from the north, whereas the attack came from the south. Although very little time was given for preparation the attack was entirely successful. Complete surprise, coupled with the low morale of the Turks, contributed largely to this success. The Turks failed to counterattack and withdrew to the west during the day.

Case 15.—Attack night of 24 April 1917 by the 26th Division, west of Lake Dojran, Greece, at the Serbian Greek frontier.¹⁵

Operations had not been at all satisfactory in Macedonia. It was decided to assume a general offensive which if unsuccessful might terminate British operations on this front.

The location of the initial British attack was at Dojran where the enemy's position was extremely strong and the ground difficult. However, the Bulgarian position was not deep at this point and the valley of the Vardar River was the most favorable avenue of approach once the Dojran position was taken. The night attack was made with two divisions (less one brigade in corps reserve) abreast. The artillery placed heavy fires on the enemy wire, but apparently there was no artillery preparation immediately preceding the attack.

Preparations for the attack were started at least a month in advance and plans were evidently made with great care, even to shifting divisions to place the best troops in position for attack. The plan included a demonstration 8 miles to the west by the 60th Division, strongly supported by artillery. Apparently the enemy had observed the preparation and was

¹⁴*British Official History of the War, Mesopotamia Campaign, Vol. III. Pages 324 to 329.*

¹⁵*British Official History of the War, Military Operations, Macedonia, Outbreak of War to Spring 1917, Vol. I. Page 302, also Appendix, page 387.*

prepared as to the time of the attack, and so far as the 26th Division was concerned, of the place of attack.

Artillery concentrations of the 26th Division troops in assembly areas and during assault were extremely costly. All wire had not been cut, and the enemy put up a stiff resistance and made a number of counterattacks, successfully defending his position. There was considerable confusion, loss of direction, and mixing of units.

The 72d Brigade was more fortunate. Before the enemy artillery fires were placed on the front lines the mass of their troops were well forward and generally out of the shelled area. This brigade met little resistance and was successful in securing its objective. Further, the objective was somewhat more advanced than the enemy had apparently expected, as the artillery fire during the night was placed on positions in rear of those actually held.

The success and failure in this operation, it is believed, were due principally to surprise and lack of surprise.

"General Milne (Commander-in-Chief) found that the lack of speedy information and the slow handling of reserves, which were 'dribbled into action' when they were used, had contributed to the failure on the 26th Division's front."

Case 16.—Operation at Prosenik, Greece, 15 May 1917.¹⁶

The night attack of 15 May was part of a general demonstration on the British front for the purpose of pinning the Bulgarians to their position and preventing reinforcements from being sent to the west. The night attack itself comprising approximately two divisions was successful. The small resistance offered by the enemy indicates the attack may have been a surprise. However, the operation only amounted to an engagement with an enemy outpost. The determined but unsuccessful counterattack at daylight is a further indication that surprise was obtained the night before.

There is little detail given on this operation. The reason for the night attack is not clear unless the open nature of the ground shows that surprise and minimum losses might be secured under cover of darkness.

¹⁶*British Official History of the War, Military Operations, Macedonia, Outbreak of War to Spring 1917, Vol. I. Page 334.*

*Case 17.—Attack of Piton des Mitrailleuses and the Dorsale, north of Machukovo, Greece, 13-14 September 1916.*¹⁷

This is one of a series of strategic operations designed to pin the Bulgarians on the British front and prevent them from sending reinforcements to the Monastir area (French-Russian). Two battalions in the main effort were given a limited objective and directed to capture a forward position some 600 to 700 yards in width located on commanding ground. The leading battalions moved out at 7:30 PM and launched the assault at 2:00 AM. Artillery preparation covered a period of 1½ days. Division artillery was reinforced in the preparation with 4.5 and 6-inch howitzers. Attacking troops used bombs freely after entering the enemy position.

The attack was a surprise and the objective was secured. However, the enemy starting at 7:00 AM brought heavy artillery fire from three sides and enfilading machine-gun fire to bear, and when coupled with a counterattack at 2:00 PM the position became untenable. An order to withdraw at dusk was issued at 4:35 PM, 14 September.

The failure to hold captured ground was due to:

- (1) The determined resistance of the Bulgarians.
- (2) The British had no intention of extending gains and permitted the enemy to hold ground commanding the captured position. Had the attack been pushed at daylight to include the capture of this high ground some 700 yards to the north of the initial objective, the British would have secured observation that would have simplified the task of holding the ground gained.

*Case 18.—Battle of Gaza, Palestine, 1-2 November 1917.*¹⁸

This attack is marked by the care which was taken to secure surprise. It was planned as a feint to draw the reserves to the west to assist another attack farther to the east. A feint embarkation was organized the day before the attack to alarm the enemy as to a landing behind the right flank. Starting at 4:30 PM, men of the Egyptian Labor Corps were embarked on naval vessels returning to shore after dark. Attacks were also made farther to the east prior to this attack.

¹⁷*British Official History of the War, Military Operations, Macedonia, Outbreak of War to Spring 1917, Vol. I. Page 166.*

¹⁸*British Official History of the War, Military Operations, Egypt and Palestine, From June 1917 to the End of the War, Part I. Pages 63 to 74.*

A long artillery bombardment (over four days) gave the enemy some indication of the intended engagement. The use of tanks also tended to warn the enemy.

During the attack there was considerable confusion and loss of direction on the front of two brigades. This, it was claimed, was the cause of heavy losses and the failure to secure all objectives. Overcrowding in the captured trenches was responsible for some of the losses (total casualties 2,696). This is a valuable illustration of a successful night attack characterized by careful preparation to secure surprise.

Case 19.—Attack in the vicinity of Sdud, Palestine, 10 November 1917.¹⁹

The 157th Brigade marched 13 miles during the heat of the day, and eighty-two men fell out from one battalion. But despite the fatigue of the men this brigade was ordered at 4:00 PM that afternoon to attack immediately a force 3 miles away to secure a water supply. Sunset was at 4:45 so it was dark before the troops approached the objective, and the advance continued by the direction of compasses. When firing began the enemy shots helped locate their position for the attacking men.

The assault was successful due to the low morale of the enemy who had recently been defeated and were falling back. The order for the attack by worn out troops can be justified only because of the importance of a water supply and the low morale of the enemy.

Case 20.—Passage of the Auja River, Palestine, 20 December 1917.²⁰

The Auja River, 40 feet wide and 10 feet deep, was a formidable obstacle, particularly with high dominating ground on the north bank (Turkish) providing observation well into the British area. The banks were soft and muddy, and the stream was unfordable except near its mouth where the water was 4 feet deep. The enemy area and the river were reconnoitered by swimming.

¹⁹*British Official History of the War, Military Operations, Egypt and Palestine, From June 1917 to the End of the War, Part I.* Page 145.

²⁰*British Official History of the War, Military Operations, Egypt and Palestine, From June 1917 to the End of the War, Part I.* Pages 269 to 275. Historical Illustrations, *Field Service Regulations*, Vol. II (British), pages 222 to 255.

The plan called for a 24-hour bombardment prior to the crossing. But the division commanders protested, and it was decided to make the crossing in silence without artillery preparation. In case the enemy should offer resistance and the success of the crossing became doubtful, it was to be postponed a day to permit a 24-hour artillery bombardment. Therefore no immediate artillery preparation was made. But drill bombardment was given several days so as not to alarm the enemy when the attack came. The navy covered the left flank and harassed the enemy every night. The signal communications net was worked out in considerable detail.

The enemy was sluggish with his security measures and surprise was obtained. The British were able to capture a strong position with but little loss. "Not a shot being fired before daylight—and we won works on the right bank with the bayonet." This night attack is listed in Historical Illustrations (*Field Service Regulations*) as a "model, almost a classic."

Case 21.—Attack in the vicinity of Jerusalem, Palestine, 8 December 1917.²¹

A small attack by the advanced guard of the 179th Brigade to secure dominating ground prior to a main attack was ordered for daylight, 8 December. A thorough day and night reconnaissance had been made. Apparently the enemy was surprised and although he offered some resistance the objective was secured. A series of counterattacks endangered the captured position, but the arrival of troops from the main body relieved the situation.

This gives a fair example of an attack to secure dominating ground, the possession of which by the enemy would endanger the subsequent main attack.

Case 22.—Crossing the Jordan, Palestine, 22 March 1918.²²

The British were far superior in numbers to the enemy at this point, but the crossing was made with considerable

²¹*British Official History of the War, Military Operations, Egypt and Palestine, From June 1917 to the End of the War, Part I.* Page 243.

²²*British Official History of the War, Military Operations, Egypt and Palestine, From June 1917 to the End of the War, Part I.* Pages 328 to 335.

difficulty largely due to the lack of surprise. "Some hundreds of enemy infantry" had been moved to the proposed points of crossing. Machine-gun fire and the swiftness of the stream prevented a successful crossing at the point favored by the road net. The attack was pushed the second night under cover of darkness at a point where some success had been gained the first night. The crossing at the place where the road net was favorable was established by flanking action.

A number of feints were ordered to the south of the crossing zone, also a party of three officers and forty-two men crossed the Dead Sea in three motor boats to assist the main crossing of the Jordan. Swimmers crossed the river with ropes which were then used to pull rafts across to ferry the first troops. Later pontoon bridges were built.

Case 23.—Attack at Garua, Africa, 29-30 August 1914.²³

This night attack was made by a small force, part English and part native, against a similar German force. The British had made a considerable advance unopposed. As they came within sight of the entrenched German positions the British commander decided to postpone his attack planned for the morning and to attack that night under cover of darkness. A fire attack by mounted infantry warned the enemy, and the element of surprise was practically lost. Native troops were badly demoralized by shell fire and were thrown into a panic in the dark. The men had to advance approximately 3,000 yards under cover of darkness to the assault position. Confusion in command coupled with the lack of surprise was largely responsible for the resulting failure.

This operation of a small independent command is of little value as an illustration except to show the importance of the elements of surprise and the coordination of command. The units engaged were small in size. The attack marked a change from offensive to defensive with the withdrawal of the British. The dangers of night attacks are indicated by the disorder occasioned among the native troops by the heavy artillery fire during the hours of darkness. This is the only night attack described in Africa by the *Official British History*.

²³*British Official History of the War, Military Operations, Togoland and the Cameroons, 1914-1916.* Pages 93 to 95.

Case 24.—The Operation of the 8th Division (two brigades) in the vicinity of Neuve Chapelle, France, 12-13 March 1915.²⁴

The enemy was thought to be badly defeated. Information indicated that the enemy was much demoralized. To capitalize this condition orders were issued about dark for an attack that night. The assault was planned for 11:30 PM but was postponed until 1:30 AM. Of the two brigades participating one had to be brought to a new front after dark. No reconnaissance was made prior to the attack.

The enemy position, however, was strong and well protected by a wired thorn hedge which later effectively held up the advancing troops. Furthermore, the enemy was not demoralized as was expected. Some premonition as to these conditions resulted in orders limiting the advance. These orders, although dated at 10:25 PM, did not reach the troops until 5 minutes before the advance had been expected. It was too late for the force commander to comply with this change in orders as he could not reach subordinate units in time. He therefore ordered all units to postpone further advance.

This attack illustrated an attempt to capitalize a previous success despite fatigue of the troops who had been under fire continuously for three days and nights. Some of the men waiting for the assault fell asleep on the battlefield, which was covered with British and German dead. It was a problem to differentiate between the dead and sleeping and rouse the troops. This operation was a failure.

Case 25.—Attack at Bellewaarde Ridge, France, 24 May 1915.²⁵

This counterattack illustrates the difficulties and disorganization incidental to enemy success. The British proposed to make a daylight counterattack but the delay in the arrival of the 84th Brigade postponed it so that it became a night attack. The troops got within a few yards of the enemy trenches but were forced back by rifle and machine-gun fire at point blank range. Surprise was apparently lacking, the

²⁴*British Official History of the War, Military Operations, France and Belgium, 1915, Vol. III. Pages 143 to 147.*

²⁵*British Official History of the War, Military Operations, France and Belgium, 1915, Vol. III. Pages 348 to 352.*

troops were inexperienced, and the units were engaged piecemeal. This attack was unsuccessful.

Case 26.—Attack at Vimy Ridge, France, 23 May 1916.²⁶

This attack is a good example of importance of surprise. A deserter informed the Germans of the plans with the result that they were able to place artillery concentration on the assembly areas and to anticipate with both machine-gun and artillery fire the forward movement of the infantry.

The decision to attack was reached at a conference at 8:30 AM, 22 May. It was planned to attack at 1:30 AM, 23 May. When the commander-in-chief heard of this he directed "full preparations"; therefore, the attack was postponed until dark, 23 May.

The enemy artillery fire not only caused many casualties but affected the almost complete destruction of signal communication. Some units of the 7th Brigade received orders to discontinue the attack while others struggled on. Three battalions on the right and left of the center actually reached the objective but were driven out by German counterattacks.

The strict orders of the commander-in-chief for careful preparation were completely offset by the fact that information of the plans had reached the enemy.

Case 27.—Battle at Fromelles, France, 19 July 1916.²⁷

The attack staged late in the afternoon 19 July had been only partially successful. At a late hour (about 8:00 PM) it was decided to coordinate the effort of the 182d, 183d, and part of the 15th Brigades to secure a limited objective by their combined action starting at 9:00 PM. About 20 minutes later the commander "learning the actual situation" (from his liaison officer) on the front of the division decided to call off the attack and issued orders to that effect.

This is an example of orders being issued without due regard for time and space factors. Although three brigades were involved, orders were issued about 8:00 PM for a combined action at 9:00 PM, and at 8:20 PM the attack was called off. The reason given for calling off the engagement

²⁶*British Official History of the War, Military Operations, France and Belgium, 1916, Vol. V. Pages 211, 219-222, and 226 (and Appendices).*

²⁷*Official History of Australia in the War, 1914-1918, Vol. III. Pages 391 to 397.*

was that supplies would be lacking. The 8:20 PM order failed to reach all units and the attack was carried out by part of the force (two companies) who were practically annihilated by machine-gun fire.

Case 28.—Attack at Pozieres Heights, France, 29 July 1916.²⁸

The Australian Division was new to the Western Front and its officers unfamiliar with the methods of warfare there. This division prior to its arrival in France had seen very limited service in the Holy Land.

Orders for this attack were issued on the evening of 26 July but did not reach the brigades until the afternoon of 27 July, at which time part of the troops were still en route to the front, from which the assault was to be made. The objective was a difficult one, and several previous attacks by the British had been unsuccessful in reaching it.

The Germans had been warned of the attack by severe artillery fire during the day, a report of strong concentration by the Australians at Pozieres, and by the detection of the 5th Brigade as it deployed. Each soldier wore a tin plate on the back of his tunic for identification by friendly troops and airplanes. The Germans used a great number of flares, and the Australians believed the reflection of these disks informed the enemy of their presence and, therefore, was a contributing factor in the lack of surprise.

The time allowed in preparation for the attack was apparently insufficient for troops new to the Western Front. At this time jump-off trenches were considered necessary for a night attack, but none were used in this assault. Troops were fired on even during the assembly. However, some commanders believed that the construction of special jump-off trenches tended to eliminate the factor of surprise, especially if the trenches were in sight of the enemy. In this case the lack of the jump-off trench seems to have been due to hurried preparations, which no doubt was one of the causes for the failure of the engagement.

The hand-to-hand encounter was carried out with bombs. It should be noted that the bomb and not the bayonet was

²⁸*Official History of Australia in the War, 1914-1918, Vol. III. Pages 600 to 646.*

becoming the weapon most used on the Western Front for close fighting.

"In the experience of the A.I.F. striking success seldom, if ever, came without at least some element of surprise; and in this battle there was none." The lack of preparation also added to the failure.

Cases 29 and 30.—Attacks at Mouquet Farm, France, 18 August 1916.²⁹⁻³⁰

These two assaults at the same time were apparently a step in the plan of reducing the German re-entrant into the British lines, "methodically, by small stages."

These two night attacks, particularly difficult in view of enemy resistance, lacked surprise and failed in accomplishment. The order for the assault was not received by the attacking troops in the front line until 10 minutes after the start of the creeping barrage which they were to follow. During this period a heavy artillery concentration was placed on these troops.

These cases illustrate some of the difficulties to be expected in a night attack:—delays and communication (runner was late in delivering order for assault)—new troops badly demoralized refused to support the units that had advanced on the objective and the importance of surprise.

Case 31.—Sixth attack on Mouquet Farm, France, 29 August 1916.³¹

The ground was well known to the officers and men, and airplane photographs of objectives had reached all company commanders. But the morale was poor. It had been raining all day and the shell holes were slimy pools and mud coated rifles, bombs, tunics, and faces. During the barrage it was difficult for the men to keep up due to the mud. No rifles or Lewis guns could be fired as they were choked with mud; even bombs were often so coated that pins could not be pulled.

Due to a delayed order to withdraw somewhat, ninety men of the 13th (New South Wales) Battalion were killed by their own heavy artillery and from enemy shells. Kollman

²⁹⁻³⁰*Official History of Australia in the War, 1914-1918.* Vol. III. Pages 780 to 791.

³¹*Official History of Australia in the War, 1914-1918,* Vol. III. Pages 828 to 839.

Trench (almost unoccupied and broken down by shells and rain) was easily taken but rifle and machine-gun fire from the direction of Courcellette and from the right front broke up first one company and then two more. A party under officers pushed on to Fabeck Graben (objective) but the troops were too few, they could not use weapons due to the mud, and they were disorganized so they had to straggle back to the old position. The left company of the 13th Battalion succeeded in capturing the objective and temporarily occupied it. Point 12 (one of the objectives of the 16th Battalion) could not be found in the dark; even a day attack over this same ground also lost its way, so this was not surprising. The fighting was very fierce and the Germans numerous.

The reason for the failure of this night attack was the rain and mud and the weakness of the attacking force.

Case 32.—Attack at Flers, France, 5 November 1916.³²

The objective of this attack was a deep sunken road 250 yards away and hidden by a curve of the ground. Its location made an accurate bombardment difficult.

No ground was gained, and the assault was a failure with heavy losses. This engagement was "made under circumstances which rendered success almost inconceivable."

Case 33.—Attack in the vicinity of Amiens, France, 10 August 1918.³³

"This is the first and last night attack made with tanks" (Captain D.E. Hickey of the Tank Corps). The account of this night attack by the 10th Australian Brigade was written from the point of view of a tank commander, and little information is available concerning the infantry operations. The plan of attack was rather complicated. The tanks were placed in the lead, and were "to penetrate the enemy line about 1 mile"—south of Proyart. After advancing three-fourths of a mile they were to "turn north at a prescribed cross roads and by an encircling movement attack Proyart from the rear. As soon as the whole column had turned north, fast armored cars with headlights on were to dash along the Amiens—St. Quentin road." The movement of the armored cars was

³²*Official History of Australia in the War, 1914-1918*, Vol. III. Page 905.

³³*Royal Tank Corps Journal*, September 1933, No. 173, Vol. XV, pages 125 to 128.

intended to confuse the enemy as to the direction of the attack. The tanks, wherever they moved, drew heavy small arms and artillery fire and the infantry objected to them. There was great confusion and mixing of units. Tank officers left their tanks and walked alongside to guide them. It is probable that a considerable amount of the confusion and the difficulty in command and communication was due to the hurried preparation of the attack.

Case 34.—Attack on Baby 700, Gallipoli, 2 May 1915.³⁴

This attack over extremely difficult terrain was based on a particularly complicated plan of operation. Confusion and delays in execution and the inexperience of the troops, especially in night operations, were blamed for the failure. The element of surprise was evidently lacking at least to a considerable degree. The attack was supported by artillery and naval gun fire. When artillery fire fell short and dropped among friendly troops the line broke and fell back and "by midday all gains had been lost." There were 600 British casualties.

Case 35.—Proposed night attack at Helles, Gallipoli, 6 August 1915.³⁵

The Division Commander was misinformed as to the result of the attack by the division during the day. The Turks had successfully repulsed the British and were taking steps to launch an assault at daylight on 7 August. Believing the attack of the division had been successful, the commander decided at 7:00 PM to have the 86th Brigade (two regiments), in division reserve, attack at 9:30 PM to secure certain limited objectives.

Orders reached the battalions of the brigades by 9:00 PM. One battalion commander after reaching the front protested because at 9:30 PM he had but one company on the front line, and due to extreme congestion and chaotic condition there the attack would entail enormous losses and doubtful success. This protest resulted in a reprimand for the battalion commander and the postponement of the attack

³⁴"British Official History of the War, Military Operations, Gallipoli, Vol. I. Pages 309 and 312.

³⁵"British Official History of the War, Military Operations, Gallipoli, Vol. II. Pages 172 to 174.

one hour. This battalion commander at 10:00 PM protested "not ready to attack, have notified 2d Regiment not to advance until I so inform him." The assault was then postponed, "Time for the attack will be given later but it will not be before midnight." When the Division Commander learned the actual conditions at 3:15 AM the attack was definitely called off.

It is believed this example of a proposed night attack is of value. Had it been carried out it can be readily seen how it would have ended in a costly failure. The Turks were prepared and in a strong position. No time was allowed for reconnaissance, and orders were issued on the erroneous information that the day attack had carried its objectives.

Case 36.—Night attack at Sari Bair, Gallipoli, 6-7 August 1915.³⁶

Several weeks were spent in preparation for this attack to break the strong Turkish position. Great care was taken in formulating the plan. A strong feint was conducted to assist the major attack. However, much of the reconnaissance of the terrain was conducted from vantage points, one of which was the deck of a destroyer out at sea, and the maps were very poor. One enemy strong point (Table Top) was fired on regularly every night at 9:00 PM by naval guns. At the same time a searchlight was thrown on this position. When the actual attack was made, Table Top was captured with no opposition.

The attack of a force with the strength of 20,000 rifles (plus seven battalions in Corps reserve) was based on a plan far from simple and called for a 90-degree change in the direction of the advance. The ground was extremely difficult, there was considerable confusion, and some units lost direction. This operation called for a march at the rate of one mile per hour, but this schedule could not be observed.

The attacking forces in one area were within 1500 yards of their objective (yet unoccupied) at 1:00 AM, and at 4:30 AM they were still 1200 yards away. Another unit in a narrow defile with no opposition except for a few scattered rifles took 3 hours to advance 600 yards. In this instance the

³⁶*British Official History of the War, Military Operations, Gallipoli, Vol. II and Appendices. Pages 182 to 203 and Appendix 7.*

troops halted when they heard firing ahead, became panicky,¹ and an order to retire was traced back to a distracted hospital orderly. The men were in poor condition, many were new to the area, and they were untrained. The commander of one column (General Cox) had reported to the command 5 days previously. The troops were burdened with heavy loads of ammunition, food and water.

The attack was a surprise and met no real enemy resistance. The failure was caused by difficulties of the terrain. The rather detailed account and copies of the actual orders as issued make this a valuable illustration of a night attack.

Case 37.—Attack at Amman, Palestine, 30 March 1918.³⁷

This attack and the operations immediately preceding indicate the importance of suitable roads. Although the British were superior in numbers to the enemy they were over 20 miles from the Jordan (airline) with roads practically impassable. Only one battery of mountain artillery was able to move from the Jordan and assist the attack. The troops were tired and somewhat discouraged by their efforts to advance over the soft ground. The enemy was in a strong position and possessed artillery. The delay of 24 hours in the passage of the Jordan gave the enemy time to prepare for the attack against Amman.

It is interesting to note that the British force included a brigade of light armored cars which were helpless in the soft footing. No motor transportation was able to proceed very far east of the Jordan. The enemy railroad line to the north brought in a constant stream of reinforcements and was an excellent means of supply.

Case 38.—Attack at Sannaiyat, Mesopotamia, 9 April 1916.³⁸

This attack was evidently carefully planned and the ground thoroughly reconnoitered prior to the attack. The failure was probably due to the lack of surprise. However, the night was very cold and dark. Men were in assembly positions by 2:30 AM and remained there in the dark until

³⁷*British Official History of the War, Military Operations, Egypt and Palestine, From June 1917 to the End of the War, Part I. Pages 341 to 349.*

³⁸*British Official History of the War, Mesopotamia Campaign, Vol. II. Pages 386 to 392.*

4:20 AM, at which time they were "benumbed." These relatively inexperienced troops then had to go some 650 yards at double time across open ground to reach the enemy front line. The extensive use of flares by the defenders indicated that they were prepared for the attack. Considering these factors it is not surprising that there was confusion and panic. "Panic, such as apparently seized some of the men, rendering a great division temporarily impotent by the disorganization it created, is one of the hazards of a night attack of which history gives several examples among the very best of troops"—and—"the panic was attributed to the benumbed state of the men, to the shortage of officers (40% killed or wounded at Hanna and Fallahiya) and to the limited experience and training of a large portion of the division who had shown they did not lack courage."

Case 39.—Attack to force a crossing at Diyala, Mesopotamia, 7 March 1917.³⁹

At 9:00 AM, 7 March, the British were some 4½ miles distant from the Diyala River and the only reconnaissance up to that time had been by airplane. The cavalry was pushed forward on reconnaissance although they did not cross the river, and the main body followed. At 5:50 PM the Corps Commander decided to force a crossing and the division orders were issued at 6:15 PM (sunset 6:00 PM). The crossing was initiated at 11:00 PM on a narrow front. The enemy had entrenched the left bank, and with surprise lacking the operation was a failure. "It was clear that further reconnaissance was essential to effect a successful crossing and further attempts were for the time being abandoned."

A possible justification of the attempted crossing may lay in the fact that the Turks had been withdrawing to the northwest and that aviation reconnaissance indicated the enemy did not plan to defend strongly at the river bank. Although this reconnaissance gave a true picture of the Turkish situation, the crossing of a narrow front without surprise against machine-gun fire was almost certain to fail.

³⁹*British Official History of the War, Mesopotamia Campaign, Vol. III.*
Pages 221 to 223.

Case 40.—Attack to force a crossing at Diyala River, Mesopotamia, 8-9 March 1917.⁴⁰

The engagement the night of 7-8 March having failed due to lack of reconnaissance, preparation, and surprise, orders were issued the morning of 8 March to continue the attack that night. Although the artillery assisted in this second attack and a feint was made to draw the enemy away from the actual crossing point, this assault was made on a narrow front and in a place where the enemy would be most likely to expect it. Without surprise the attack resulted in a considerable number of casualties and failed as did the first.

However, about sixty men dug in on the enemy's side of the river and remained there until the next night, when additional troops crossed. The operation on the south bank of the Tigris caused the enemy, already badly demoralized, to withdraw from his Diyala position the night of 9-10 March, and troops were therefore reinforced with little opposition from the enemy. The limited success of this night attack resulted almost entirely from the demoralized state of the enemy troops.

Case 41.—Operation at Virhanli, Greece, 17-18 November 1916.⁴¹

Sometime after 2:40 PM, 17 November, orders were issued to force a crossing of Virhanli Stream (unfordable) that night. Units were to move to the river three-fourths mile distant at 11:30 PM and to start construction of bridges at once.

It was a very dark night and the leading elements (sappers) reached the stream at a point where it was 50 to 60 feet in width. The Engineers had brought material for a 30-foot bridge. Unable to find a place where the stream could be bridged, "the operation was a fiasco."

This was one of a series of demonstrations with limited objectives to prevent the enemy from shifting forces to the Monastir front.

It is evident that the lack of reconnaissance was the cause of this failure. The brigade commander desired to renew

⁴⁰*British Official History of the War, Mesopotamia Campaign, Vol. III. Pages 224 to 228.*

⁴¹*British Official History of the War, Military Operations, Macedonia, Outbreak of War to Spring 1917, Vol. I. Page 244.*

the attack the following evening, but the corps commander ordered him to devote the night to a thorough reconnaissance.

Case 42.—Operation Virhanli, Greece (Tumbitza Farm), 7 December 1916.⁴²

A daylight attack to cross Virhanli Stream having failed, the brigade commander desired to force a crossing about one-half mile to the south under cover of darkness. Initial orders were issued at 4:35 PM, but did not reach the attacking force until 8:50 PM, 6 December 1916.

One battalion of infantry headed by a party of bombers was ordered to force a crossing. The Lieutenant Colonel commanding the battalion protested this plan on the grounds that he knew the prospective crossing was strongly held by machine guns, the enemy was thoroughly alert, and that no reconnaissance had been made across the river. With the assent of the brigade commander it was decided to postpone the attack until daylight.

Case 43.—See Case 16 for details.⁴³

Case 44.—Attack Dojran, Greece, 8 May 1917.⁴⁴

This attack was really a continuation of the engagement discussed in *Case 16*. The 26th Division had failed initially, and it was desired that the same division secure its first objective and reduce the salient resulting from the attack of 24 April.

Although orders were issued 2 May for the attack on 8 May, the plans do not appear to have been carefully made, as they were changed as late as 5:00 PM the evening of the attack. During the night there was considerable confusion, and the operation was marked by "many deplorable errors." Units were ordered to withdraw through misunderstanding after objectives had actually been taken. This operation indicates a serious breakdown in communications and consequently in command.

⁴²*British Official History of the War, Military Operations, Macedonia, Outbreak of War to Spring 1917, Vol. I.* Page 248.

⁴³*British Official History of the War, Military Operations, Macedonia, Outbreak of War to Spring 1917, Vol. I.* Page 334.

⁴⁴*British Official History of the War, Military Operations, Macedonia, Outbreak of War to Spring 1917, Vol. I.* Pages 319 to 324; and Appendix, pages 387 to 391.

COLLECTIVE ANALYSES OF CASES

Forty-four cases of British night attacks have been selected for consideration. A detailed analysis of each case is presented in the attached chart*. Of these examples twenty-two are classed as successful or partially successful and the other twenty-two as failures.

Reasons for Night Attacks

The objectives of the night attacks were almost without exception strong enemy positions possessing dominant observation of British areas. The attacks were generally launched under cover of darkness to minimize losses, especially from enemy machine-gun fire.

In at least eight of the cases, half successful and half unsuccessful, previous day attacks had failed. The objectives of approximately 15% of the attacks were a capture of key positions and bridgeheads preliminary to the advance of the main forces. In three cases night attacks were launched evidently because a previous success in such operation and three attacks planned to exploit previous successes. Two of the latter were ordered on erroneous information of the enemy and were complete failures. Two attacks were the result of delays in operation causing postponement of attack until darkness had fallen.

In the later stages of the war in Palestine, the British were advancing against a weaker enemy. In this area they made extensive use of darkness to minimize losses in the advance. In this connection the following quotation from *Official History of the War, Egypt and Palestine*, Volume I, is of interest: "With few exceptions the enemy's resistance had never been really stout, but time after time a few boldly-handled machine guns had been sufficient to hold up resolute attacks. It was only by waiting for dark and then pushing on regardless of the country—on assumption that loss from broken limbs would be less than from bullets—that any advance at all had been possible in several instances."

Growth in Use

It had been the intention to show if possible whether the night attack was regarded with greater or less importance as

*Note.—See Chart at back of book.

the war progressed. This study was seriously handicapped by absence of volumes of the *Official History* covering the last two years of the war on the Western Front. The 1914 account of battles on this front (*Official History*) does not furnish a single example. The first in this area is that of 15 May 1915, described as the first British night attack of the War. During this early period the British were on the defensive and the only night attacks were carried on by the Germans.

That night attacks were considered of great importance later is shown by the account of the Australian operations in 1916. "Not including counterattacks or small bomb attack of 21 July and counting as one each of double operations of 25 July and 18 August, sixteen of the attacks were made at night." The Australians had launched a total of nineteen attacks in this six-weeks period of 1916.

The apparent slowness to make more extensive use of the night attack on the Western Front was due probably to the belief that artillery support was impractical at night. In one instance the French refused to make a joint night attack with the British as they desired a previous artillery preparation as well as artillery support for the attack. General Rawlinson himself pressed his French colleagues to agree to an attack before sunrise. The latter were, however, definitely against the idea, insisting that the attack must be made in daylight, in order that the artillery might have opportunity for observation during the final bombardment. In April 1916 General Rawlinson stated: "The intense bombardment must take place in daylight." This was the general belief at the time and before gas shelling came in.

Apparently greater use was made of night attacks on the eastern fronts. This was particularly true in Egypt in the later stages of the war when the Turks were dropping back and using machine guns and terrain to delay the advancing British. An inspection of the attached chart will show a number of examples where one night attack followed another. At Lake Dojran, Greece, four night attacks were made in less than a month. At Gallipoli the Turks, though much inferior in numbers, had the advantage of observation and position. The British used the cover of darkness to protect their advances.

It is believed that a study of later editions of the *Official History* as they come from the press will show that the night attack was regarded with ever increasing importance on the Western Front as elsewhere.

Units and Frontages

The chart indicates that the largest force to stage a night attack was a division plus a brigade. Both successful and unsuccessful attacks took place with forces of this size. However, units as small as a battalion made successful attacks.

Although over half of the attacks shown on the chart, employed units the size of a brigade or larger, it will be noted that the attacks were made on a relatively narrow front. In one instance a force comprised of a division and a brigade assaulted on a front of some 14,000 yards, but this was against a weak enemy outpost and not against a strongly held position. The narrowness of the attack is shown by the fact that the typical frontage for a division was less than 2,000 yards. In one instance a division and a brigade attacked on a front of but 800 yards. The data on frontage should not be accepted in any one specific case as being absolutely reliable. The account in the *Official History* did not always include details of maneuver. Although an attack would be executed by a division, and boundaries were definitely established, yet a considerable portion of the division might have been kept in reserve and not have participated directly in the engagement.

Paragraph 561 of the *United States Field Service Regulations* states that night attacks are "usually of limited scale." Apparently from the experience of the British forces as large as a division may execute limited scale attacks.

Preparation

The successful attacks are characterized generally by careful preparation and planning. In at least nineteen of the twenty-two successful attacks, orders were issued in time to permit a daylight reconnaissance. In the successful attack, in which there was not time for a daylight reconnaissance the enemy had been defeated and was withdrawing.

In approximately one-half of the unsuccessful attacks the time allowed for reconnaissance and preparation was

insufficient. If the orders were not issued so as to permit a daylight reconnaissance the time was considered inadequate. In two cases too short a time was allowed for preparation due to a belief that the enemy was badly defeated and that direct pressure must be continued at all cost. In others the cause of failure may be found in a lack of appreciation of time and space factors by commanders issuing orders. There were a number of striking examples of orders being issued so late that they did not reach all units in time to comply as directed. Orders to discontinue the advance at Neuve Chapelle (*Case 24*) failed to reach one unit which went on and attacked alone.

In only three cases was there definite evidence of special night attack training. However, it is interesting to note that in all three cases the attacks were successful. In some six cases at least troops wore some special identifying mark. In one, the use of a metal disk as an identifying mark was unfortunate. The bright disk was intended to assist in identifying ground forces from the air as well as on the ground. However, the men believed, and not without cause, that these disks also helped the enemy snipers. White patches and ribbons of colored cloth were also used for identification.

Appendix 6, Official History, France and Belgium, 1916, contains a copy of an order for a night raid considered a model of its kind. This order prescribed an attack by two battalions of picked officers and men and provided for night and day training in a rear area. Faces were to be covered with veils of crepe. Flash lights were attached to bayonets for illumination in close fighting. Routes to No Man's Land were staked out.

Plans

All but one or two of the attacks indicated an appreciation of the necessity for a simple plan and a limited objective. Such an objective, except for landing on a hostile shore, was considered to involve an advance of less than a mile. In most cases to well under 1,000 yards! The failure of the attack at Sari Bair (*Case 36*) it is believed was due principally to the fact that the plan was a difficult one and the distance to the objective was great.

Practically all plans provided for an attack straight to the front. In some instances the terrain was such that reli-

ance was of necessity placed on compasses to give proper direction. The bayonets tended to destroy the accuracy of the compass direction, however. Objectives were difficult to define in a number of instances and inability to locate them and uncertainty as to direction of advance caused considerable confusion in several of the attacks.

The accounts gave little evidence of provision for success or failure. However, it is believed in many cases that plans provided for action in case of success or failure.

Normally the attack was supported by artillery. The desirability of cutting enemy wire and of interrupting communication and command prior to attack by artillery fire was counted by the disadvantage of possible loss of surprise. Many and varied means were taken, particularly on the Western Front, to provide for artillery fire prior to the attack and still secure surprise. In a number of cases fires covered a wide front and were carried out systematically over a considerable period of time. The enemy was accustomed to routine fires and the actual assault was staged after a very short preparation or immediately at the conclusion of a normal artillery fire. On the Eastern Front the tendency was to restrict the use of an immediate artillery preparation.

But two examples of the use of tanks by the British were observed. In one (*Case 33*) they were a decided liability. In the second, American tanks participated with the British, but details were lacking, and this case was not included in the chart. Although this attack was successful the Chief of the American Tank Corps is quoted as follows: "I am bitterly opposed to any night attacks involving tanks—cooperation between tanks and the infantry during darkness is impossible. The 301st Tank Bn. (U.S.) was the only tank unit in France to conduct a night attack."

In one or two instances cavalry assisted in night attacks under open warfare conditions. In one, aviation participated. However, the attacking force was generally confined to infantry with artillery support.

On the Western Front it was customary in 1916 to prepare jump-off trenches for the assault. The lack of such trenches was given as a contributory cause of failure in one case. However, it was observed that the construction of such trenches tended to eliminate surprise.

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It is interesting to note that in the case of approximately one-half of the successful attacks and one-third of the unsuccessful attacks, feints or other operations were carried on simultaneously with or just before the night attacks.

Communication

A considerable number of the cases studied were characterized by delay and interruption of signal communications. This was particularly true on the Western Front with its heavy artillery fires. Wire lines would be interrupted and messengers then became the important means of communication. Command Posts were difficult to locate in the darkness and communication was slow and often unreliable. *Case 24* furnishes an example of a serious delay in the transmission of orders to troops. After the landing of Suvla, Gallipoli (*Case 12*) the brigade commander, partially because of a break-down in his communications, was not informed as to the locations of the leading units. He issued an order for these battalions to assemble in an area well in rear of their actual location as a basis for further advance. The many examples of confusion and disorder resulting from delayed and interrupted communication during darkness, is indicative of the importance of careful and adequate provision for signal communication.

Troops

In at least two-thirds of the successful attacks the troops were classed as experienced, with but one or two cases of unexperienced troops being used. Whereas, in about one-half of the unsuccessful attacks the troops were lacking in experience, and in a number of cases their morale was low. It is believed that the lack of experience in men and officers in a number of unsuccessful attacks was responsible for the absence of surprise and consequent failure in attack.

Weather and Terrain

The illustrations do not establish any direct connection between weather and success. Attacks were successful and unsuccessful on both light and dark nights, and clear and stormy ones. In one case, a cold wet rain probably caused the enemy outguards to seek cover, thus assisting in effecting sur-

prise (*Case 21*). In another (*Case 30*), rain and intense darkness was considered as a contributory cause to failure. Again (*Case 31*), mud prevented the use of rifles and machine guns and was the principal cause of failure. Darkness tended to make control and communications difficult. Light assisted in control but rendered observation and loss of surprise more likely.

Weapons

The principal weapons were the bayonet, bomb, and rifle. In most cases mention was made of the use of rifle and bomb. Where the rifle fire was confined to short ranges was not always clear. The bayonet was a principal weapon. However, the extensive use of bombs indicates that the bayonet may have to share honors with the bomb. In the model raid previously mentioned, careful preparation was made to insure an adequate reserve of bombs. In Gallipoli the supply of bombs was limited and the troops improvised their own. The relative importance of the bomb and bayonet when used in night fighting is a subject that may well merit further study.

In several instances rifles were carried unloaded. This may have been done to foster surprise and to compel the use of the bayonet and close fighting.

Enemy

In approximately 40% of the attacks, the enemy provided illumination of the battlefield by searchlights, flares, or rockets.

The principal weapons used by the defender were the machine gun, rifle, bomb, and artillery.

An inspection of the chart shows, that in the case of the unsuccessful attacks, the enemy outguards and patrols tended to be more vigilant and active than when the attacks were successful. Also the morale and discipline were generally better when the attack failed.

Surprise

The chart furnishes most conclusive and almost startling evidence of the importance of surprise. Practically without exception, success or failure was accompanied by the presence or absence of surprise, and the degree of success may be measured by the degree of surprise. Only one attack that possessed the element of surprise failed (*Case 39*), and that

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failure was due to terrain and not to the enemy. Only one attack lacking surprise secured partial success and that only because of an extremely limited objective.

Conclusions

The cases analyzed indicate:

- (1) A night attack should be carefully planned.
- (2) That adequate time for preparation should be provided.
- (3) That trained and experienced troops be used.
- (4) That the objective be a limited one.
- (5) That the plan be simple.
- (6) That the bomb and bayonet are the important weapons.
- (7) That above all else surprise is the essential element.

The importance of careful planning and preparation of a simple plan, with limited objectives and of weapons of close combat is realized. But the primary consideration is surprise. Lacking this element an attack will probably fail. Possessing surprise, success is almost assured.

The cases presented and analyzed substantiate the soundness of the principles for night attacks as presented in our *Field Service Regulations*.

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Section 2
ABSTRACTS OF FOREIGN-LANGUAGE ARTICLES

This Section contains abstracts of selected articles from foreign military periodicals. Section 2 is designed to cover articles regarded as important; the remaining articles for each magazine are listed in Section 4.

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DEFENSE AGAINST ARMORED VEHICLES

By Major C.A. Willoughby, Infantry

Captain Zyrkiewicz, of the Polish Army, has established the reputation of expert in the matter of armored vehicles (tanks and armored cars) through the previous publication (1928) of a standard work; the opinions of the author are regarded as authoritative, and may be said to reflect accurately, the present tendencies and professional methods of European military establishments. The problem of defense against the surprise attacks of these novel weapons, which combine speed with great offensive powers, is controversial but important. It is already apparent that the armored car, ordinarily employed for reconnaissance, approaches in design, the so-called "light tank," a type seeking speed by reduction of armament; both types will probably merge into a cross-country "combat car." At any rate, the similarity of tactical operation—surprise combined with speed—tend to make certain defensive measures applicable for all types.

A.—THE PASSIVE DEFENSE

This is an immediate responsibility of all units, regardless of broad measures of defense ordered by higher echelons, such as strategic zones of obstacles, demolition belts, etc.

Abstracted from: *Bulletin Belge des Sciences Militaires*, January 1934.
"Comment combattre les autos blindés." By Captain Zyrkiewicz

1. *Selection of position.*—Emplacements of defensive weapons are recommended in (a) advance of the main line of resistance, selecting open terrain to take approaching vehicles under early fire; (b) in proximity of the main line of resistance. In that case, the presence of natural or artificial obstacles is essential, compelling the approaching vehicles to slow down speed precisely at the moment when they will come under organized defensive fires.

Obviously an ideal combination of such conditions is rare. In selecting emplacements, the author recommends exaggerated care, rather than false optimism.

2. *Utilization of natural obstacles.*—The accidents of terrain become all important and are judged solely by their effect on the speed and itinerary of these vehicles: sharp declivities, forests, wooded areas, water courses of a depth of at least 3 feet, any topographical feature which will slow down the advance.

3. *Employment of artificial obstacles.*—The general method is to employ artificial obstacles only across natural channels of advance of enemy vehicles, or at points in their probable itinerary that can only be discovered at the last moment. The obstacles consist ordinarily of ditches, lines of masonry, barricades, steel rails, etc. Areas of obstacles are strengthened by automatic mines.

The destruction of bridges is always a concern of higher authorities; ordinarily it need not be resorted to, as an incident of antitank defense, because the removal of the flooring, or the erection of a barricade, is sufficient to stop or slow down the vehicles and expose them to organized defensive fires, at that moment.

If the itinerary of the vehicles can be determined, emplacements of pill boxes may prove advantageous in controlling sections of highways, road junctions, crossings, etc.

The employment of gas and smoke has probably not been sufficiently exploited in the past; great effect may be expected in forcing the operating personnel within the enemy vehicle to wear gas masks, considering that visibility is already greatly restricted in the present design of average armored vehicles.

A project of the future may be found in the application of electric waves (type Mathews) to stop motors at a dis-

tance. This is extensively studied abroad and may lead to practical results.

B.—THE ACTIVE DEFENSE

The object of the passive defense is to give time for active defense measures and assure the cooperation of all antitank weapons; the passive defense aims at slowing down the advance of armored vehicles so that organized defensive fires may be brought to bear upon them. The principal agencies of active defense, are:

1. *The artillery.*—This is the most effective weapon against armored vehicles, but its employment requires special training and special dispositions: (a) Barrages or concentrations? The great inconvenience lies in the fact that they can not be employed at the critical moment, *i.e.*, when the enemy vehicle is on top of the friendly infantry. (b) The bracket. The author recommends the habitual initial bracketing of the approaching vehicles to be shortened gradually. (c) Emplacement of single pieces. According to recent maneuvers (and certain war incidents) the employment of camouflage pieces, opening surprise fire, seems to give best results.

2. *Accompanying weapons.*—They intervene at closer ranges, and in areas they can not profitably be reached by artillery. Fire must be held until the last moment; cover and concealment are of great importance. The moral effect on the enemy crews is unquestionable; the present antitank cannons (75-mm., etc.) are highly effective. Infantry mortars of present design are regarded as having too much dispersion to be really useful.

3. *Special antitank weapons.*—Their importance and efficiency is recognized. The author lists the principal types in use abroad: (a) Antitank rifles. German designation: T-Rifle, caliber 13-mm., piercing armor of 22-mm. thickness at 400 yards; the Germans were sufficiently impressed with the possibilities of this weapon, to order 4,000 of them in 1918. (b) Heavy machine guns. Caliber 20- to 25-mm., type Necker, Cerney, and Madsen. The Hotchkiss antiaircraft machine gun, firing 450 rounds per minute, while primarily designed against aircraft, is equally suitable against armored vehicles. (c) Antitank cannon of 37- and 75-mm.; this type is highly developed and effective.

The development of the infantry rifle, as an armor-piercing weapon, by increasing the muzzle velocity, has aroused great interest abroad; if successful, this development will be of the greatest importance.

4. *Machine guns and auto-rifles.*—The employment of fire in short bursts is recommended, particularly against vulnerable parts in the design of the vehicle (wheels, differential, sighting slits, etc.). Firing tests (and war records) indicate that 50% of casualties are produced by bullets entering crevices and slits.

5. *Hand grenades.*—Flame thrower. Hand grenades must fall directly under the vehicle, where there is no armor; the procedure is risky, primitive, and requires iron nerves. The present flame thrower is in the same category.

6. *Mines, etc.*—Small detachments, specially trained and provided with speedy transportation are regarded as a very effective defense agency, even in a mobile situation.

7. *Aviation.*—The cooperation of aircraft is increasingly important both in reconnaissance, in locating early concentration and movements of approaching vehicles, but in attacking them directly with bombs.

8. *Armored vehicles.*—Our own armored vehicles (tanks, combat cars, etc.) are available in the scheme of defense and represent a direct and effective counter-tank weapon; naturally, they must be available in sufficient numbers and of equal design, and armament, to the enemy vehicle; in this connection, the Carden-Lloyd type of small tank is highly recommended. The friendly vehicles attempt to draw enemy vehicles into mined areas, or barrage areas where prepared fires become effective. The author expects the development and employment of an antitank tank, a sort of "tank-destroyer"—again following the evolution of naval warfare.

C.—TACTICAL INSTRUCTION

1. *Moral training.*—It is conceded that the tactical efficacy of the attack by armored vehicles is based equally on moral effect as well as actual losses. It is of the highest importance that the soldier become familiar with these vehicles, their strong and weak points, their tactical procedure and appearance. Moral factors must be stressed, to efface

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the fear inspired by these modern monsters; the soldier must be reminded constantly, that

- (a) Fleeing before armored vehicles is certain death;
- (b) Tenacity has every chance to succeed;
- (c) Terrain is everything, as the enemy vehicle has poor visibility;
- (d) Calm fire against sighting-slits;
- (e) The real enemy is behind the line of vehicles.

There is a frank recognition of the danger of panic as a terrible possibility of this modern weapon; this involves a great responsibility upon the commander, who must make serious provisions for a defense plan, utilizing every means at his disposal. At distances greater than 1,000 yards, only artillery intervenes; below 1,000 yards, single pieces, antitank guns, etc., enter into play; at the same time machine guns fire on the enemy infantry, following the wave of enemy vehicles. Direct fire against these vehicles is opened at approximately 200 yards, using special armor-piercing ammunition; to concentrate on these vehicles earlier leads to a waste of this special ammunition.

Considering that these vehicles will attempt to pass quickly through the fire-beaten zones prepared against them, the scheme of defense must arrange for considerable depth. A defensive scheme, based on organization of localities, is probably most effective.

2. *Defense of marching columns.*—The author is seriously concerned with this problem, which is regarded as pressing and altogether risky and difficult. He recommends the closest attention to:

- (a) Itineraries; defense possibilities; alternate itineraries and eventuality of rapid changes.
- (b) Effective organization of reconnaissance and security, far beyond ordinary routine measures.
- (c) Pre-arranged dispositions for defense.
- (d) Pre-arranged conduct of troops.
- (e) Intensive use of patrols, at least 3 kilometers from the general axis of advance of the column.

THE EMPLOYMENT OF TANKS AND COMBAT CARS IN THE DEFENSE

By Captain F. During, Infantry

Characteristics of defense, delaying actions, withdrawals, and pursuit remain the same as before; only methods have changed, because the means for war are undergoing a constant development and modernization. The present trend is toward motorization and mechanization and the employment of tanks and combat cars has raised the question, whether they should be used exclusively on offensive missions or whether they could also be used on the defense. This question is of great importance. The views differ greatly; some are very optimistic in their belief as to the effectiveness of tanks and combat cars in a defense, while others are somewhat hesitant, and still others say they should be used offensively and offensively only. One thing is certain: if used on the defensive, they will, without question, hinder the freedom of maneuver of the enemy; they will strengthen the defense and will also inflict losses to a considerable degree on the enemy.

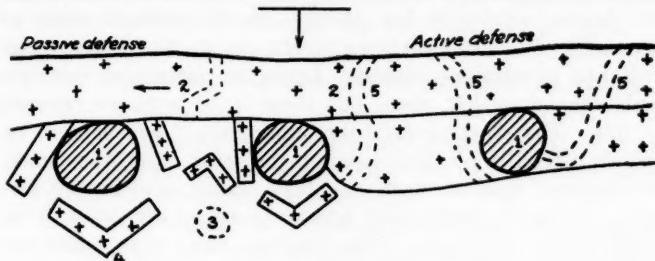
Due to the great mobility of motorized and mechanized troops it will be possible to defend large sectors with comparatively few troops, provided we consider the characteristics of tanks and combat cars. In a sector defended by tanks and combat cars we must have barricades against attacks by enemy mechanized units; barbed wire entanglements and other obstacles against advancing infantry, and the selection of positions of tanks, etc., must be such that a protective fire covering the entire front is assured.

The advantage of barricades is that they are easily erected. The work of erecting such a defensive sector 1,000 yards wide and 5,000 yards deep, requires 70 working days and 5 tons of material, while it takes 600 working days and 200 tons of material to prepare the same area for a zone defense. The barricades must be so strong that the attack of enemy mechanized units be made very difficult, in fact, impossible. Barricades must not only be erected in the front but also in flanks and rear. On account of the depth of the defense it will be possible to oppose successfully any enemy attack against flanks and rear. The sector turned

Abstracted from: *Wehr und Waffen*, February, March, 1934. "Verwendung von Kampfwagen in der Verteidigung von Abschnitten in Verbindung mit Geländebefestigungen."

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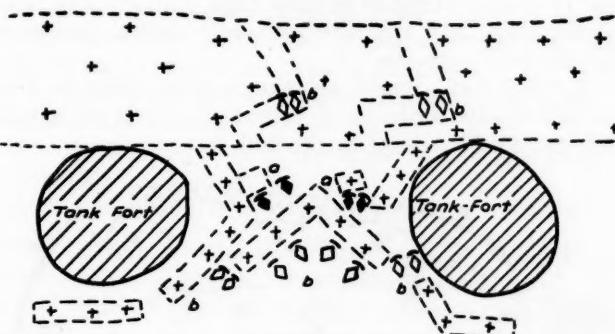
over to the tanks and combat cars for defense must not be a continuous line, but must consist of strong points, based on



SKETCH No. 1

Not drawn to scale.

- 1—Tank forts; 2—Obstacles; 3—Reserve tank fort; 4—Obstacles;
5—Lanes for friendly tanks.



SKETCH No. 2

- a—Position of combat cars;
b—Alternate and reserve position.

favorable tactical terrain features. The strong points must be covered from view of the enemy and are manned by tanks and combat cars. In front of and between these strong points (tank forts) barricades, ditches, and other obstacles should be prepared. This system pertains to a passive defense.

We can expect that in future wars the infantry will be transported in armored trucks as close to the front line as possible; therefore all obstacles and avenues of approach should be covered by flanking fire of artillery and machine guns. Artillery will take the armored trucks under fire, which

will force the men to leave the trucks, only to be met by machine-gun fire. In an active defense, strong barricades are not deemed advisable, but all avenues of approach must be covered by fire. Areas between strong points should be covered by tanks in reserve positions. Lanes for the use of our own tanks should be left open, but these lanes must be covered by fire. The strong points are "tank forts," which must be able to defend in all directions; on the other hand, they must be protected against enemy artillery, tanks, and enemy aircraft. In each strong point several positions will have to be prepared for each tank. This does not mean that tanks can not leave the strong points, if the situation demands; they must be able to leave at any time on an offensive mission. A company of tanks should be given a frontage between 2 and 3 miles to defend. One tank company in position is equal in combat strength to three tank companies in attack. Therefore one tank company can easily defend against one attacking tank battalion.

A "tank fort" should not exceed 1,000 yards in width. It is well to have a platoon of riflemen in trucks cover points which can not be covered by the tank fort.



SKETCH NO. 3

Tank fort

a—Tank positions; b—Natural or artificial obstacles; c—Alternate tank position; d—Parapets; e—Mine fields; g—Cover trench for tanks (see Sketch No. 4); h—Camouflage; i—Motorized artillery; k—Command post.

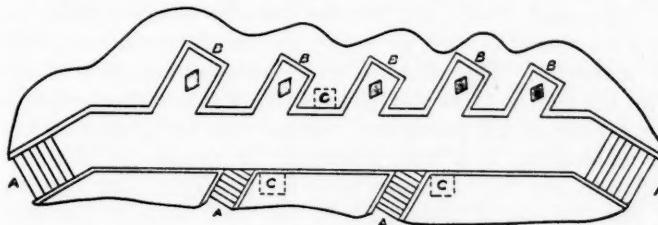
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The "tank fort" must be protected from within against enemy aircraft by heavy machine guns. The entire fort must be surrounded by obstacles, leaving openings for the tanks to move out.

The preparation of a tank fort should be in the following priority:

- (1) Erection of barricades and obstacles.
- (2) Preparation of one main and two alternate firing positions for tanks or combat cars.
- (3) Distribution of motorized artillery to different forts, when the area between forts exceeds 1,000 yards. The mission of the artillery is to place flanking fire in the area between the forts.
- (4) Camouflage.
- (5) Preparation of cover for protection against enemy artillery fire and enemy attacks by air. (Due to the fact that practically no infantry is present, firing and communication trenches need not be built.)
- (6) Preparation of dummy barricades in order to deceive the enemy.
- (7) Building of an armored and camouflaged observation post.
- (8) Building of a command post.

Only after barricades have been prepared, which should be completed in one night, should the preparation of firing positions begin. Sometimes it will be advisable to build cover trenches for the tanks; the tanks are held here until their use is required at the firing position. (See Sketch No. 4.)



SKETCH No. 4

Cover Trenches for Tanks

A—Entrance and exits; **B**—Trench for tanks; **C**—Dumps for material and ammunition.

INFANTRY IN THE ATTACK—FRENCH AND ENGLISH VIEWS

By Captain Fred During, Infantry

It has been said that the experiences of the World War have lowered the standing of the infantry arm, and that the infantry has now turned over the mission of attack to the heavy artillery, armored cars, and tanks; and that in the future, infantry would only be used to occupy positions, which have been captured by tanks and armored cars. Based on the above statement, it seems that, in the future, leadership and combat efficiency of troops will be only minor factors; but, to have a large mass of "matériel," will be of the greatest importance. Perhaps our narrow-mindedness prevents us from following this view. We have continued to develop the infantry arm. It is true, artillery, armored cars, and tanks are important in the attack, but the infantry is still the queen of battle. Motors can not influence the determination of combat principles. The more thoroughly we study the technique of motors, the more we learn of their limitations. Infantry will receive missions in an attack which are impossible of solution by machines. There is a feeling prevalent that the infantry, with its old equipment and combat principles, is not capable of coping with the numerous situations which may confront it in the next war; and suggestions and experiments to reorganize and equip the infantry are numerous. In order to learn from the experiments of other nations we shall present the views of France and England on the infantry in the attack.

The views of the French on infantry attacks are known. The infantry, under protection of the artillery, advances close to the enemy, then, using rifle fire and rifle grenades, demoralizes the enemy to such an extent that he will either withdraw or surrender. This advance of the rifle companies is called "feu qui marche" (fire and movement). The battalion arranges for a planned fire protection. Should this fire protection fail to materialize, it is then practically impossible for the battalion to give the companies other fire protection, but for such a case the use of armored cars and fast tanks is planned. Even the most ardent advocates of mechanization are somewhat disturbed by the reports received from nations which

Abstracted from: *Militär-Wochenblatt*, 4, 11 January 1934. "Infanterie im Angriff. Französische und englische Stimmen."

have experimented with motorization and mechanization, and it is very probable that the infantry will have to depend on its own weapons for a long time.

The machine gun (heavy) is the weapon which must give the advancing infantry protection. The main characteristic of the gun—flat trajectory—makes it a valuable weapon for the defense, but hardly suitable as an offensive weapon. It is also a difficult and dangerous procedure to fire the heavy machine gun over the heads of advancing infantry. This fact must be considered when the use of heavy machine guns in support of infantry is contemplated. The position of the guns must either be far in rear, or it must be taken in the front line. Experience has shown that the heavy machine gun is ineffective if placed far to the rear; therefore, each rifle company should have heavy machine guns as an auxiliary weapon.

A lighter construction of the heavy machine gun (somewhat like the light machine gun) would, however, be better suited for front line use. This would do away with the heavy machine-gun company. There is much controversy on this subject, but experience seems to dictate the change as outlined. The following disadvantages have been cited: the terrain in Europe is considered as being favorable for use of the heavy machine gun; the advance of attacking infantry is slowed up, if rifle companies have to carry the guns with them, even more so if the tripods have to be carried; and the fire support and control by the battalion would be taken over by the company and, therefore, the company commander would have to worry about ammunition supply, etc.

Separation of fire from movement begins with the battalion. The companies, having only light weapons, advance by the use of fire and movement. The battalion commander has the mission of supporting the advance by fire; he can only fulfill this mission if he has the heavy machine guns under his control. Having good observation and first-class matériel, the effectiveness of the heavy machine gun should be increased, and it would also be possible to fire over the heads of advancing infantry. This would be a decided advantage, as the heavy machine gun would then be an offensive as well as a defensive weapon. The best weapons to support infantry in the attack are high angle weapons, viz.: artillery pieces, minen-

werfer, and rifle grenades, etc. It has been suggested that the minenwerfer be replaced with rifle grenades and an issue of a sufficient number of rifle grenades be made to each rifle company for that purpose. We are forced to disagree with this suggestion; we believe that, at the present time, the battalion has an insufficient number of minenwerfers.

Major Cazeilles advocates the following organization of a battalion: Rifle companies should be increased from three to four, each rifle company to have light machine guns and rifle grenades as auxiliary weapons. A fifth company should be added to the battalion; this company should have all heavy weapons (heavy machine guns, super-heavy machine guns for tank and antiaircraft defense, and minenwerfers). The advantage of having all heavy weapons in one company would be that of observation, ammunition supply, etc.

The French view on infantry in attack can be summarized as follows: Infantry advances under its own fire, supported by weapons of the battalion heavy company.

Armored car support would be most advantageous in support of advancing infantry. Tank support is not contemplated in the modern French view.

The views of Captain Liddell Hart are more advanced. He believes that the battlefield of the future will be controlled by armored cars, aviation, and automatic weapons. He warns against over-rating the combat efficiency of infantry. He gives the attacker two missions: "Fix and finish." The infantry is too slow to "finish" the enemy; only a fast-moving weapon can do this. It was the cavalry who, formerly, by attacks in flank and rear, forced a decision. Today this role belongs to the motorized units.

The infantry must attack frontally, weaken the enemy, and pin him to the ground, in order to permit the motorized units to destroy him completely. Captain Liddell Hart calls the infantry of old "heavy infantry." The present heavy armament of the infantry is well suited for defense, but too heavy and cumbersome for the attack, which makes it a good target for automatic weapons.

He advocates a new "light infantry" and makes suggestions as to armament, equipment, mobility, organization, training, and combat. "Light infantry" must have light weapons. The present rifle is too heavy; a smaller caliber

rifle would be better. The infantry does not need automatic weapons. The most dangerous weapon to advancing infantry is the machine gun, but a sharpshooter armed with a small caliber rifle could easily kill the man serving the gun. The mechanized machine gun and the infantry accompanying gun, following the attack very closely, supports the attack by fire. A light machine gun has no place in a rifle company, nor should the rifle and smoke grenades be a part of an infantryman's equipment. They should be carried, in motorized combat vehicles of the infantry company, for special occasions. Present-day clothing and equipment is too heavy and should be changed. The total weight of the equipment should never be more than one-quarter of the weight of the man. Anything which hangs on a man has a tendency to slow up his movements; therefore, a small pack, light clothing, a hat, and a light overcoat, are sufficient with which to take the field.

The time of long marches must be a thing of the past; "light infantry" should be brought to the place of attack by motors.

Strategical mobility alone is not sufficient; tactical mobility is needed. Motor trucks carrying infantry must go as far forward as the enemy fire will permit. It is not necessary to use armored trucks for this, as armor-piercing bullets render the armor almost worthless.

The following is the proposed organization of an infantry battalion: one motorized rifle company, one mechanized company of heavy weapons for support of the infantry, one or two reserve rifle companies in trucks. The total strength of the battalion need not exceed five hundred men. The road space for this battalion is rather extended, but it is the time it takes to pass a given point, and not the road space, which is important. Considering this factor, we find that the road space is actually less than that of a marching battalion.

The system of attack is not the fire and movement type. The "light infantry" enters the enemy line at known weak spots, or gaps, and then (like an increasing flood) enlarges the weak places. Every opportunity to advance must be made use of, irrespective of possible danger of enemy attacks against flanks.

Captain Liddell Hart gives three forms of attack as follows:

(1) The "stalking attack" which utilizes all available cover. This form of attack is used when time and terrain permits. It will be successful if sharpshooters work around to the proximity of enemy machine guns and kill the manning parties by well aimed shots.

(2) The "masked attack" permits the use of masses, provided we have darkness, fog, or smoke. Captain Liddell Hart mentions here that all attacks on the Western Front which were made under cover of fog or smoke, were successful. Night attacks are very advantageous. The "light infantry," which is especially trained for this, should easily overcome the difficulty of night attacks. The battlefield should be illuminated by large searchlights, etc.

(3) The "surprise counterattack" is made under conditions which do not favor counterattack; therefore the enemy, not expecting an attack, will be completely taken by surprise. This form of attack can be made under the guise of a withdrawal, or, by the occupation of a point, which, being important to the enemy, would lure him to attack there; a prepared counterattack would so surprise him that success would be most certain.

The training of "light infantry" is difficult. Parades are time wasting and awaken false instincts in the men; therefore, they should be dispensed with. Training in scouting and use of cover must be stressed. The different actions in night attack must be carefully taught. Withdrawals must be practiced. The latter has a decided psychological advantage. Troops must become entirely familiar with the use of motorized vehicles. All infantry officers must carefully study the last war, especially the action of battalions and companies. Officers and men must be sharpshooters, excellent scouts, and capable of prolonged physical exertion; in other words, the new infantryman must be a sharpshooter, stalker, and athlete.

Captain Liddell Hart's views have found full approval in England.

Comparing the English and French views, we can only conclude that it is not the development of technique, but

the morale and characteristics of the people which determine the mode of combat.

NIGHT OPERATIONS

By First Lieutenant T. North, Field Artillery

Lieutenant-Colonel Hassler makes a study of the details of the execution of night operations in the light of certain cases in the last war and considers the results which may be expected. From this study he derives nothing new in the way of fundamentals; however, by actual examples he illustrates the principles laid down in French regulations and adds certain comments which have particular interest.

THE DIVISION IN NIGHT ATTACK

Although French regulations for the employment of large units advise that night operations should be undertaken with limited forces only, it is worthwhile to consider the possibility of this type of operation using large units on wide fronts.

The author quotes the case of a night attack made on 9-10 September 1914, along a 20-kilometer front by six divisions of the Army of the German Crown Prince, who had decided to make this attack in the hope that his infantry would break through the enemy positions without being exposed to the crushing fire of the French artillery. An advance from four to six kilometers was made, when mixing and disorganization of units caused it to be halted at daybreak.

Emphasizing the difficulties of a night attack by large units and the confusion which may result, even if it succeeds, Lieutenant-Colonel Hassler sums up the principles of execution as follows:

A night attack by large units should only be undertaken in order to capture definite objectives which the higher commander wishes to retain.

If a division be required to make a night attack it should hold to a minimum the number of columns and points of attack. It should select two or three very definite points and launch separate but coordinated attacks simultaneously; otherwise the first attack will alert the enemy.

Abstracted from: *Revue d'Infanterie*, December 1933. "Les opérations de nuit." By Lieut.-Colonel Hassler

The attack should take place in the latter part of the night so that the enemy will not have time to react.

As a general rule, night attacks pass beyond the will of the commander once they are launched. The best way for him to be properly informed is to have the troops clearly mark the lines reached and to have these recorded from the air.

CAREFUL PREPARATION

This is absolutely essential to the success of a night attack. Any haphazard measures lead to disaster. The author cites the case of an improvised night attack which degenerated into panic and stampede. "Night attacks must be planned, and their execution guided down to the last detail of material means and of human preparation. Everyone, from the private to the commander must know exactly what he is to do: his mission, direction of attack, contact or liaison he is to maintain, and objective to be reached.

The troops must be brought into position in front of their objective during daylight. They must be shown visible reference points and must note how these reference points are silhouetted against the sky at nightfall and how their outline changes in the darkness.

Such preparation involves, among other items, a perfect knowledge of the ground to be crossed, bounds to be made where necessary, and action required following the success of the attack.

Men should be given a distinctive mark if possible, such as brassards, a canvas patch on the back, etc. Artillery should either be employed as a mass to put down a deluge of shells a few minutes before the attack, or should not be used at all, since the principle of surprise will always play the essential role in night attacks."

FIRE IN NIGHT ATTACKS

Belgian Infantry Combat Regulations prescribe that "the troops move forward to the assault without halting, if possible. They do not return the fire of the defense except in case of absolute necessity."

Lieutenant-Colonel Hassler illustrates these principles by a night attack which was executed in February, 1915, with

complete success and without a single shot being fired. Two attacks which had been made by day against the same objective had been repulsed with heavy losses.

He concludes: "The formal order not to fire is one of the conditions of success. When night assault echelons fire it can be assumed that the operation has failed."

NIGHT MANEUVER

French *Instructions for the Employment of Large Units* state that there can be no maneuver at night. French *Infantry Regulations* are less rigid and state that a maneuver at night is difficult. The author believes that under certain circumstances it is possible to effect a change in direction by night if there is an unmistakable means of orientation within the zone of action, such as main highway, railroad, canal, etc.

In such a case a formation in parallel columns is not as satisfactory as the diamond-shaped formation, which enables the commander by a simple right or left face to reduce maneuver to its simplest form.

"Although apparently simple, this maneuver is a delicate one. It requires closely maintained contacts, and usually a halt of several minutes in order to notify all groups concerned."

SELECTION OF THE HOUR OF ATTACK

This depends upon the object of the attack. If it is desired merely to take prisoners, destroy matériel, disturb the enemy's line of retreat, or complete a daylight success, the early hours of darkness should be chosen. If it is desired to seize and hold a position the latter part of the night is preferable. This denies to the enemy the time and power to react.

Naturally this opinion can not be accepted too literally. Concerning the second case, Belgian *Infantry Combat Regulations* properly prescribe that "the hour of the attack should be so fixed that the indispensable defensive works may be completed before daybreak."

SIZE OF UNITS ENGAGED

Avoid large units.

Night operations succeed through the action of the first wave. Supports are valueless since they can not and should not take part in the fight itself.

The first echelon is worth only as much as its leaders. Hence, with a battalion attacking with two companies in assault, the two captains and the eight section leaders will be in advance of their echelon. The battalion commander will take station where he can await the result of the operation and can act as circumstances may require. If he moves during the operation where he can not be found, he will be useless.

Machine guns should not accompany the assault. They should be held within reach of the battalion commander and used as circumstances may dictate either in case of failure or to cover the flanks of the attack.

NIGHT DEFENSIVE

Lieutenant-Colonel Hassler mentions a very interesting case of a company which was able to ruin a German counter-attack by leaving the trenches it had occupied during the day and taking up a position enabling it to break up the enemy's attack by flanking fire.

He maintains that there is no rule-of-thumb or system for night defense.

In general, careful laying of automatic weapons, vigilant sentries, coolness on the part of the defenders, commanders to be with their men, are requirements which, if observed, will be able to cope with the best organized night attacks.

In night fighting more than at any other time the commander should be among his men. He should energize his unit, reassure it by his presence, and inspire it.

CONCLUSION

Night operations are difficult. The action of the troops pass out of control of the higher authority which must decentralize command among lower echelons. It will be found necessary to get along without the support of long-range weapons. Errors in direction and their resultant confusion must be fully taken into account.

Simplicity is essential. Choose limited and clearly defined objectives; orders must be brief, clear, positive, and precise. The troops must be called upon to the limit of their physical and mental capabilities.

Despite inherent difficulties, it must be borne in mind that well-prepared night operations vigorously executed reduce casualty lists.

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**TACTICAL EMPLOYMENT OF MACHINE GUNS
IN THE GERMAN ARMY**

By First Lieutenant T. North, Field Artillery

The following outlines of the present German doctrine concerning the employment of machine guns have been derived from *German Infantry Regulations* and articles in military magazines:

The employment of the German machine gun aims at obtaining the effect of surprise and the effect of mass.

In the *defensive* the machine-gun company is the framework of the battalion scheme of fire. Dispositions must be camouflaged; no emplacement should be occupied before it has been prepared and carefully concealed; alternative emplacements are built; certain pieces are designated to remain silent, with important surveillance missions; fire is frequently indirect, to avoid enemy artillery observation. In the normal barrage all means are massed.

The heavy machine gun barrage will be so prepared as to form a continuous screen in front of the sector of defense. The barrage of flanking machine guns should be so adjusted as to fall closely in front of the foremost positions. Such barrage is more difficult to cross than that of artillery.

In close terrain, at night, or in fog the machine guns are pushed forward, sometimes into the front line.

In the *offensive*, while shock action is decisive, proper weight also is given to fire action which opens the way to the assaulting elements and covers their advance. Thus, since at the beginning of the battle the artillery will often be unable to furnish adequate support to the infantry, the Germans insist upon the maximum of infantry fire. "The closer the infantry approaches to the enemy (and protection from natural cover diminishes), the more must the latter be neutralized not only by the divisional artillery but also by the heavy infantry weapons, particularly the heavy machine guns. . . . At this time it will usually be found necessary to attach certain of the heavy infantry weapons to the front-line units. In very close terrain or in darkness this attachment is often necessary from the opening of the battle—and in the attack through the depth of the enemy position when

Abstracted from: *Revue d'Infanterie*, December 1933. "Quelques idées sur l'emploi tactique des mitrailleuses dans l'armée allemande." By Major Cazeilles

the machine-gun company commander can no longer maintain centralized control."

In principle, however, "the fire power of the heavy weapons is used to the greatest effect when they are grouped under their own commander."

When the advance meets resistance which must be broken by an attack "the company commander must make a timely concentration of those sections which are available, so that when the attack is launched the company may be employed as far as possible as a unit."

Furthermore, "in the attack the chief concern of the company commander must be to maintain constant control over the platoons directly under his command, including those which are most distant, so that he may be able to concentrate their fire power," and he assigns zones for surveillance and fire to each platoon—the basic fire unit.

Chiefs of platoons must be skilful and resourceful. Fire is carefully prepared by the platoon headquarters group, of which each member is a specialist. It has even been suggested that the nature of his training prevents the German machine-gunner from functioning properly without his elaborate optical instruments; each platoon has at least one Zeiss range-finder (the company has several in reserve), Zeiss binoculars of large magnifying power, and goniometric equipment similar to that of the artillery. All noncommissioned officers and some privates have Zeiss or Goerz glasses.

The tendency, then, is towards controlled mass fire with the object of producing an effect akin to that of surprise upon those targets of the greatest tactical importance. Indirect laying is largely employed, and the company is well organized to handle such fire; the company command post is connected to one or more observation posts, the platoon chiefs, and battalion headquarters. The captain conducts the fire by observing the effect, involving procedure and equipment similar to those of the artillery.

Where terrain and mission permit, the heavy machine guns may fire over the infantry from high points of dominating positions, taking advantage of all possibilities of flanking fire, or through intervals between infantry combat formations. Thus the machine-gun company participates in the preparation fire by supplementing or replacing the artillery.

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"This preparation, which must be carefully coordinated as to time and target, can be transformed at the moment of the assault into an artillery and machine-gun rolling barrage. In a war of movement the machine guns can often furnish, by their own means, the fire support necessary to neutralize the enemy at the moment of the assault."

Machine-gun units should have these characteristics:

- (1) Boldness.
- (2) A high order of technical attainment on the part of staff and troops.
- (3) Flexibility in the staff so that it can adapt itself to all situations, with versatility in the selection of methods of combat.

At first contacts, when infantry units are deploying along wide fronts, fire superiority is assured by pushing some machine guns forward, and, of course some artillery, including medium. Enemy resistance will be sporadic and can thus be dealt with by the companies to which these machine guns are attached. In this fast-moving phase rearward machine guns will displace the forward echelons and go into action rapidly, by the exercise of close liaison with the front-line infantry companies and the use of adequate observation personnel. In this manner, from the outset the enemy will be taken under fire of many automatic weapons, carefully camouflaged.

The Germans count upon their successful infiltration methods of 1918, which imply the offensive spirit and considerable flexibility and initiative. When enemy resistance is developed the battalion commander will regroup his machine guns to prepare the attack, without relying upon the artillery, except, of course, against an organized position.

For such purposes a new, longer-range, heavy machine gun will probably be used, and the German infantry will seek to neutralize its enemy by a hail of projectiles from invisible weapons, although critics have pointed out the limitations imposed by the ammunition supply available to the machine-gun company. A zone of fire on those counter-slopes suspected of masking the weapons will have but doubtful success against such small targets.

As soon as the assault echelons have a foothold in the enemy position, a portion of the machine guns will be attached

to the front-line rifle companies to assist them in reducing isolated points which hold out. Machine-gun unit commanders and their reconnaissance elements will push forward to maintain liaison with the firing line so that they may engage their rearward weapons opportunely.

CONCLUSIONS

As a fundamental principle, infantry must be capable of obtaining fire superiority beginning with the first enemy contacts and in the shortest possible time. Hence all weapons will be employed from the outset and commanders of machine-gun units must be prepared to go into action at any moment with the maximum of effect.

In the application of this principle there is no iron-clad method. Weapons may be grouped, scattered, employed under company control, attached to patrols; fire may be direct or indirect. The German regards war as a series of concrete cases for each of which there is a particular solution. Necessarily a carefully selected personnel is required, and is obtainable under the Reichswehr regime.

Surprise and speed will characterize the German campaign, and at the first contact a hail of bullets will smother the enemy, thanks to the abundance of means of observation and signal communication.

For every weapon there is a defense. Against the flat trajectory of the machine gun there is ground cover, camouflage, and field works. Depth in defensive organization, use of pieces in surveillance, barrage weapons habitually silent and therefore escaping the enemy's preparation fire—all these will effect surprise at the moment of his assault. Detailed observation should reveal the opponent's dispositions; there are no troops, however well-disciplined, who do not commit an occasional indiscretion. Blinding observation posts with artillery and machine-gun fire can disturb the enemy's conduct of fire. A logical employment of adequate infantry weapons will usually succeed in neutralizing the attacker's fire.

All of these measures presuppose the three fundamental requirements: thorough instruction, coordination, and perfect discipline.

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THE CAVALRY AT TANNENBERG

By Captain James C. Short, Cavalry

In this article it is proposed to bring out what the German Cavalry did, and what the Russian Cavalry should have been able to do, during the first month of the war in Eastern Prussia.

The plans of the belligerents in East Prussia were as follows: Germany planned defensive maneuvers and entrusted them to the Eighth Army which was concentrated to the west of the Masurian Lakes; Russia planned offensive action, having as its aim the invasion of Eastern Prussia from two concentric directions, one (First Army) from the zone of the Njemen River towards the west and the other (Second Army) from the zone of the Narew River towards the north.

The terrain of Eastern Prussia, flat and sprinkled with woods and marshes near the frontier, is densely cultivated and irrigated in the area west and northwest of the Masurian Lakes. The rivers Angerapp, Alle, and Pregel constitute obstacles of considerable difficulty. The road net is bad.

Forces opposed to each other in Eastern Prussia:

German

Eighth Army (von Prittwitz and later Hindenburg)

Army Corps, I, XVII, XX, and I Reserve

1st Cavalry Division

3d Reserve Division

Division of Landwehr

Landwehr and fortress troops

Total: 170 battalions, 82 squadrons, and 794 guns.

A German cavalry division consisted of:

3 brigades of two regiments of four squadrons

1 group of three horse batteries, each of four guns

1 battalion of cyclists

1 machine-gun troop (six guns)

Engineers and service troops.

Army cavalry consisted of one battalion of four squadrons to each infantry division.

Abstracted from: *Ejercito e Nazione*, January 1933. "La cavalleria a Tannenberg." By Mario Marazzani

Russian

Group of Armies of the Northwest Front (General Jilinski)

First Army (Rennenkampf)

Army Corps, II, III, IV, XX

56th Reserve Division

4th Brigade of Fusiliers

Cavalry Corps (1st and 2d Guard Divisions;

1st, 2d, and 3d Cavalry Divisions, and one independent cavalry brigade)

Second Army (Samsonov)

Army Corps I, VI, VIII, XV, XXIII

2 infantry divisions

1 infantry reserve division

1 brigade of fusiliers

4th, 6th, and 15th Cavalry Divisions.

Total: 430 battalions, 331 squadrons, 1620 guns.

A Russian Cavalry Division consisted of:

2 brigades of two regiments of six squadrons

1 group of horse artillery of two batteries, each of six guns

1 machine-gun troop of eight guns

Engineers and service troops.

Army corps cavalry consisted of one regiment of six squadrons with each army corps.

The Germans were inferior in cavalry—about eighty squadrons against more than three hundred. In training, armament, material, mounts, etc., the cavalry of both forces were considered equal. However, the German cavalry was to prove itself much superior to the Russian.

During the concentration of the German Eighth Army between Gumbinnen and Deutsch Eylau, the screening was entrusted to the Frontier Corps and the cavalry which cooperated in scouting, maintaining liaison, and fighting. For example: the 10th Chasseurs, on 11 August, attacked near Goldap and drove back strong Russian forces across the frontier. The German 1st Cavalry Division (General Brecht) was sent out to the extreme left of the Eighth Army to Pillkallen (northeast of Gumbinnen).

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The Russians entrusted the screening to Cavalry Divisions¹ and to a force of the combined arms. The interval between the two armies, more than 100 kilometers, was covered by weak detachments of cavalry.

INITIAL OPERATIONS

Two hours after the declaration of war, Russian cavalry forces crossed the border at several points to harass the German mobilization. The 6th Cavalry Division marched on Soldau but was driven back with great loss on 5 August. The 4th Cavalry Division met the same fate on 9 August southwest of Lyck. The 1st Cavalry Division (General Gurko) was more fortunate. From Suwalki it reached Marggrabowa 10-11 August, where it destroyed important works and captured much correspondence, the source of valuable information. However, the Russian cavalry, which one would think "should have come down like a cloud of grasshoppers," did not take advantage of the great chance that the situation offered. For instance, a raid in force by the cavalry of the First Army on Insterburg and on the Tilsit-Insterburg-Alenstein railroad would have been invaluable.

The German cavalry, due to its small numbers and the task of screening entrusted to it, was not able to accomplish any other important action. The 1st Cavalry Division attempted a thrust at Kovno, 4 August, but did not accomplish much.

On 16 and 21 August, respectively, the Russian First and Second Armies started the advance, the First Army to the west, and the Second Army to the northwest. The great force of cavalry was disposed a little in advance on the flanks of the two armies. The First Army had the Cavalry Corps, less the 1st Cavalry Division on its right, and the 1st Cavalry Division on its left; the Second Army had the 4th Cavalry Division on its right and the 6th and 15th Cavalry Divisions on its left. The cavalry detached scouting parties (10 troopers to a squad) having as their principal mission the security of the Army. This simple close-in reconnaissance was the task of the service of security; distant reconnaissance did not exist,

¹Two cavalry divisions for the First Army assembled in the Njemen zone from Kovno towards the south, and for the Second Army three cavalry divisions assembled in the Narew zone from Lomja towards the southwest.

and we shall soon see that the lack of it resulted in grave consequences. The 1st and 4th Cavalry Divisions were also ordered to maintain liaison between the two armies, a distance of 80 to 100 kilometers. A few independent squadrons and patrols were charged with this service, such that these elements marched 100 kilometers a day. Nevertheless, there were no known cases where information was not transmitted with the maximum dispatch.

STALLUPÖNEN (17 AUGUST)

According to the orders of the commander of the German Eighth Army, the I Corps, upon the completion of its concentration, should have remained at Gumbinnen. Instead, on the initiative of its commander (von Francois) it pushed on to Stallupönen. On 17 August, it became engaged with two corps of the Russian First Army. It pushed them back but was compelled to withdraw its own left, covered by the 1st Cavalry Division, which had on its front the greatly superior force of the Russian Cavalry Corps. The Russian Cavalry Corps advanced very slowly and did not take advantage of its superior strength and of the favorable situation to defeat the German 1st Cavalry Division, and then act against the flank and rear of the German I Corps. This was not all. It did not even maintain contact with the enemy, who retired on Gumbinnen.

GUMBINNEN (19-20 AUGUST)

The commander of the German Eighth Army advanced the XVIII Corps and the I Reserve Corps from Angerapp toward Gumbinnen against the Russian First Army. This army, renewing its advance on 19 August, struck the German I Corps east of Gumbinnen. The 2d Landwehr Brigade, ordered by von Francois to move from Kraupisken to turn the Russian right, ran into the Cavalry Corps (Kahn Hussein), and, exhausting its ammunition, was compelled to retire. Hastening to its aid upon the orders of von Francois, the German 1st Cavalry Division, in a surprise attack towards evening, struck the Russian Cavalry Corps and drove it back to the east with great loss. On 20 August, the 1st Cavalry Division was in position to help in a turning movement launched from the left of the I Corps. Observing the retreat of the Russian front from the menace of such a maneuver, the 1st

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Cavalry Division followed them, reaching Pillkallen, 12 kilometers behind the Russian lines, at 3:00 PM. From there it turned south and defeated strong Russian columns, capturing two machine-gun companies, the colors of the 110th Infantry Regiment, and the commander of the 3d Infantry Regiment. After marching 50 kilometers, the division returned to Pillkallen, where it spent the night of 21 August. This was, without doubt, a brilliant cavalry action. The German 1st Cavalry Division in one-half day had marched more than 100 kilometers, had fought many combats, and had penetrated deeply in the enemy's rear, causing serious disturbance. One must remember that the division did not have at its disposal either infantry or cyclists.

The corps cavalry of the German Army Corps also took part in the battles, performed reconnoitering and screening missions, and maintained liaison. Deficient, however, was the action of the cavalry of the German I Reserve Corps (on the German right flank), which was surprised on 20 August, by Russian troops coming from Goldap.

The actions of the Russian cavalry were very different from those of the German 1st Cavalry Division. The Cavalry Corps and the 1st Independent Brigade remained inactive all 20 August, a short distance from the field of action of the German 1st Cavalry Division; the 1st Guard Brigade, due to the great loss on 19 August, was taken back to Kovno for reorganization. This inaction by some was attributed to a shortage of ammunition, by others to the sudden blow inflicted on 19 August, and by others to the fact that the Independent Cavalry had the ability to maneuver widely and freely, not only on the field of battle, but also outside of it away from its own main forces. The cavalry of the First Army, using this principle of the regulations, after the repulse of 19 August, should have used the interval of time to rest, and should have been able to reenter the fight at the proper moment. This does not justify the inaction of 20 August; the great superiority of force and the rest it had during the night of 20 August, were sufficient to overcome the crisis that had overtaken it on 19 August. The Russian cavalry should have taken part in the battle on 20 August and should have stopped the German 1st Cavalry Division, which was much inferior in strength. Furthermore, it should have

supported the action of the Army Corps, exploiting the success of the center or helping restore the situation on the right. On the left of the First Army, after advancing a short distance to the west of Goldap, 20 August, the cavalry remained inactive. It should have been able to support the action of the IV Corps on the right flank of the German I Reserve Corps.

FROM 21 to 23 AUGUST

On the evening of 20 August, the commander of the German Eighth Army ordered the retirement to the west. Notwithstanding the close contact with the enemy and the fatigue of the troops, the retirement was effected in perfect order. While the I Corps was entrained at Insterburg and Königsburg, the two Corps (I Reserve and XVII) retired by marching on Allenburg and Nordenburg, covered by the 1st Cavalry Division. The division was very weary. Its commander wrote to the Eighth Army Commander: "During three weeks not one day of rest; at the last, three days of constant fighting and marching; water is too scarce; we are without rations; horseshoes worn out; horses very tired; only half of the command is fit for further combat. It is necessary to be transported by rail to obtain one day of rest." The request was highly justified but the situation did not permit inaction, and the division was ordered to continue without rest and without sparing itself.

The commander of the Russian First Army perceived the German retirement only on the morning of 21 August. Then he did not think to pursue and regain contact, even though he had at his disposal five divisions of cavalry. The consequences of this lack of employment of the Cavalry were very grave. The First Army Commander remained in the dark as to the movements of the enemy and his retirement on Angerapp and then on Königsburg from the evening of 20 August. He did not even imagine the danger that menaced the Russian Second Army. The inaction of the Cavalry was certainly one of the principal reasons for the neglect of the First Army to intervene in favor of the Second, and as a consequence of this neglect, the destruction of the latter. If, instead, the Cavalry had been promptly employed on 21 August, it certainly would have regained contact, disturbing the movements of the German Army Corps and with the

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information obtained should have caused the First Army to go to the aid of the Second. The knowledge of the deployment of the German forces to the south should have caused it to act in the same direction, obliging the enemy to face it and thus, instead of the encircling of the Russian Second Army, the German Eighth Army would have found itself encircled or would at least have had to retire towards the west to avoid pressure from the two Russian armies.

The Russian Cavalry should not have found a serious obstacle in the German 1st Cavalry Division, worn out and distributed over a large front. The raid which General Gurko made on Allenstein on 30-31 August, although too late, proves this.

Danilof writes: "Rennenkampf did not understand and did not know how to exploit the favorable situation; certainly he did not know how to employ cavalry with great damage to the success of subsequent operations."

TANNENBERG (23-31 AUGUST)

Von Prittwitz was relieved for having ordered and insisted on the retirement to the west, and on 23 August, Hindenburg with Ludendorff as his Chief of Staff took command of the German Eighth Army. The situation on 23 August, can be summarized as follows: The German Eighth Army was divided into two groups, the southwest group (XX Corps, 1st and 3d Reserve Divisions) in the zone Gilgenburg—Orlau, facing the Russian Second Army, which was marching on Allenstein—Seeburg from the zone: Soldau—Ortelsburg; the east group (I Reserve Corps and the XVII Corps) on the march from the zone of Insterburg to that of Nordenburg. The Russian First Army, halted on the field of Gumbinnen on 19 August, began on 23 August to advance slowly toward the west.

Hindenburg, in consequence of this situation, decided to attack the Russian Second Army with his main force and to hold the Russian First Army with the mobile reserves of Königsburg disposed on the rivers Pregel and Deime, and the troops of Lotzen; between these two the 1st Cavalry Division screened the movement of the east group to the south. The 1st Cavalry Division thus took over the task of screening on a front of about sixty kilometers. As has

already been stated, it should have been easy for the superior force of Russian cavalry to break this thin screen and uncover the plans of its adversaries. Instead, the Cavalry Corps was held on the right flank of the Russian First Army and the Russian 1st Cavalry Division on the left; on 23 August, the Russian cavalry on the north crossed beyond the Inster and on the south reached the Angerapp near Angerburg. Having found these two lines free of the enemy forces, they did not think to push forward rapidly to the south or southwest, nor to the west. The negative information thus obtained should have induced the Russian commander to try to regain contact in the right direction.

For the Russian Second Army, the 4th Cavalry Division covered the right. The 6th and 15th Cavalry Divisions covered the left and also the concentration of the Russian Ninth Army in the Warsaw zone.

The commanders of the northwest front and the Russian Second Army were preoccupied by the fear of a non-existent menace from Thorn. They made dispositions to parry this threat—dispositions injurious to the success of the contest—and, without trying to obtain information of this supposed menace by using the large cavalry forces at their disposal. At one moment they considered uniting the 6th and 15th Cavalry Divisions to form a Cavalry Corps to launch towards the northwest, in order to cut across the way of the German Army engaged with their First Army, and to raid in rear of the German west group. They considered their First Army in retreat to the Vistula. They did nothing. The two cavalry divisions remained on the left of the Army and not until 26-27 August, was contact gained with the enemy on the front: Strasburg—Lautenburg, in which action they were driven back. The projected action, had it accomplished nothing else, would certainly have retarded the operations of unloading and concentrating the German forces arriving in the zone: D. Eylau—Allenstein. No distant reconnaissance was made in front of the Russian Second Army, which on 22-23 August, halted its flanks (I Corps at Soldau, VI Corps at Ortelsburg) and advanced the center (XIII, XV, and half of the XXIII Corps) toward Allenstein—Seeburg. It happened in consequence that the Russian center unexpectedly encountered the German XX Corps, on 23 August, along the front: Lahna—

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Orlau. After two days' fighting (24-25 August) it was able to advance toward the front: Allenstein—Osterode. The left (I Corps) was halted at Usdau and the right (VI Corps) was ordered from Ortelsburg toward Gr. Bossau through fear of German attack from Lotzen—another non-existent menace not discovered by the use of the cavalry available on this flank (4th Division). The VI Corps used the 4th Cavalry Division on reconnaissance toward Sensburg and Rastenburg. The patrols signalled movement of strong enemy forces toward the southwest in the zone of Rastenburg, but they stopped to entertain themselves with units of the II Russian Corps and did not check up on this news by extending their reconnaissance more to the northwest. Because of this, the VI Corps remained in ignorance of the approach of the German east group. Meanwhile, Hindenburg, following the moves of the enemy on 24 August, ordered the I Reserve Corps and the XVII Corps to attack the Russian VI Corps. The German 1st Cavalry Division, which had again without avail asked for a day of rest, continued to cover the shoulders of these two Army Corps. On 26 August, at Gr. Bossau, the VI Russian Corps was surprised and routed. The Russian 4th Cavalry Division not only failed to prevent the surprise attack, but, according to the German report, took no part in the battle. It was ordered to cover the retreat of the Russian VI Corps on Ortelsburg, but became occupied with small forces of the German 1st Cavalry Division covering the left of the east group, and retired without hindering the small forces which pursued the VI Corps, and without hindering the stronger force which proceeded south to attack the center of the Russian Second Army on its flank.

On 27 August, the German east group thrust forward toward the southwest and subsequently toward the west (Allenstein). This new direction was ordered by Hindenburg because of information furnished by a patrol of the 5th Dragoons, of the arrival at Allenstein from the south of the Russian XIII Corps. At 10:30 AM, however, a patrol of the 1st Hussars (I Reserve Corps) brought in the information that there was only a small enemy force at Allenstein. From this information the commander of the German I Reserve Corps deduced that the Russian XIII Corps would attempt a retreat to the southeast. He decided to cut across the road

to the south, southeast of Allenstein, and asked the XVII Corps to do the same. The plan was approved by the Army Commander and the two corps struck the left of the Russian XIII Corps in retreat, causing it to deploy toward the southeast, and thus to fall within the circle which even now was closing on the Russian center from the south. There is no need of additional words to bring out the importance of the information furnished by the German Corps Cavalry in the development of this maneuver.

On 26 August, while the Russian right was being defeated at Gr. Bossa, the left was attacked by the German west group; the German I Corps took Seeben on 26 August, Usdau on the 27th, and on the 28th, Soldau, Neidenburg, and Muschaken, and made a thrust at Willenberg. On 27 August the 3d Reserve Division and the left of the XX Corps were forced back by the Russian center, which reached Raichenau and Allenstein. On 28 August, the right of the XX Corps was forced back. The Russians, beyond sending forward one brigade of cavalry from the 64th Division, did not profit from this situation.

The cavalry of the German Army Corps took an active part in the battle. The 8th Uhlans (I Corps) and two squadrons from the XX Corps maintained liaison between the attacking units during the period 26-28 August and, near Soldau, pursued the retreating enemy. On 28 August, the 8th Uhlans with one battery attached were the first to arrive in Neidenburg from the south, while the 10th Chasseurs (I Corps) were the first to arrive from the west. Numerous Russian troops were thus encircled and captured.

We shall see now what happened on the front of the Russian First Army, which recommenced its slow march to the west on 23 August. Slightly preceding the flank of the Army, the Cavalry gained contact with the German 1st Cavalry Division on 25 August. This Division was compelled to retire on Bischofstein on 26 August and, because of fatigue, could not execute the orders which it received that day to reconnoiter toward Rastenburg and Lotzen, to observe the movements of the Russian II Corps, and to delay its eventual advance on Rastenburg. Since the Reserves of Königsberg had retired behind the Deime on 26 August, the way between this river and Bischofstein was open to the Russian First

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Army, which on that date had reached the front: Deime—Friedland—Rastenburg. Patrols of the Russian Cavalry, on the same day (26 August), reached P. Eylau and Heilsberg. The commander of the Russian First Army did not perceive the void he had in his front. He did not take advantage of his superior cavalry force. This force should have been able to clear up the situation in time for the First Army to go to the aid of the Second. Certainly it could have caused great damage to the German rear and considerable trouble to the commander of the German Eighth Army. Instead, the commander of the Russian First Army, seeing that his cavalry could not reach the enemy forces "such was their speed," definitely gave up the attempt to regain contact and planned to invest Königsberg. On 28 August, however, the commander of the northwest front finally perceived the critical situation of the Russian Second Army and ordered the First Army to its aid, saying "Advance your right wing as much as possible against Bartenstein and your cavalry toward Bischofsburg." It can be seen that the order was not of an energetic character, and the commander of the Russian First Army resented it. On 28 August, the Cavalry Corps reached Domnau and Schippenbeil, and the 1st Cavalry Division reached Korschen. Behind the cavalry two corps followed on Königsberg and two were directed on Bischofstein and Seeburg. On 29 August, the Russian First Army reached the Deime and went beyond the Alle to Bartenstein, while the Cavalry Corps went beyond Heilsberg toward Wormditt. To the south the 1st Cavalry Division advanced with difficulty beyond Bischofstein and Rossel until halted by the German 1st Cavalry Division, which retired slowly on Lautern. The commander of the German Eighth Army, while arranging to concentrate troops at Allenstein to oppose the Russian First Army, ordered the German 1st Cavalry Division to retire, in case of necessity, on Ortelsburg. Already one brigade of the Division had been put in this locality in pursuance of an order received on the night of 29 August, to cooperate in the encircling of the Russian Second Army. The German Army Commander wrote "the cavalry must not give up"—a phrase which appears superfluous in an order to a division which never had given up, even to save itself. Meanwhile, on 29 August, the German circle began to close about the center

of the Russian Second Army; the I Corps closed the gap: Neidenburg—Willenberg; the I Reserve Corps and the XX Corps the gap: Neidenburg—Allenstein; the XVII Corps the gap: Passenhein—north of Willenberg. Very little opening was left to the Russians to escape to the west. The Corps Cavalry was on this day, as always, very active and audacious. The 8th Uhlans (I Corps) with detachments of the 10th Dragoons (XX Corps), captured more than five thousand Russians on the road: Neidenburg—Willenberg. The 10th Chasseurs (I Corps) reached Willenberg at 3:00 PM, a quarter of an hour before the Infantry. They overcame the enemy resistance and captured many. The 5th Hussars (XVII Corps) preceded the Infantry toward Willenberg. The Corps Cavalry of the I Corps and XVII Corps very nearly closed up the only hole remaining to the Russians north of Willenberg but, due to fatigue, did not quite succeed.

On the morning of 30 August, following the capture of the XIII, XV, and one-half of the XXIII Russian Corps, the German aviation reported two counteroffensive actions of the Russians which had been ordered by the commander of the northwest front, on Neidenburg (I Corps) and on Ortelsburg (VI Corps and 4th Cavalry Division), in an attempt to break the German circle. The German I Corps succeeded in driving back the Russian I Corps; but, at Ortelsburg, held by only one and one-half battalions without artillery from the XVII Corps, the situation was very critical. The 10th Chasseurs (I Corps) with a battery of artillery from Willenberg hastened to reinforce these troops, and thus the resistance held until the arrival of part of the 35th Infantry Division (XVII Corps). Upon the arrival of this force, the Russian VI Corps retired. The German aviation the same day, 30 August, reported an attack on Lautenburg, by a strong Russian Cavalry force, and brought back information that disorganized Russian forces were at Zielun. This last was probably the result of an attack of the Russian 15th Cavalry Division on Zielun, and the attack by one Sotnia of Cossacks on Radosk, both of which were repulsed.

While these actions were taking place, the Russian 1st Cavalry Division, under Gurko, made a raid on Allenstein (30-31 August). The commander of the northwest front, simultaneous with counter-offensives of the Russian I and

VI Corps, on 29 August, ordered the Russian First Army to advance on Allenstein with two corps and the largest possible cavalry force. Subsequently he ordered the cavalry only to effect "an advance of reconnaissance to clear up the situation and help the Second Army." He thought to "clear up the situation" on 29 August, now that the Battle of Tannenberg was ended. The possibility of accomplishing this had ended on 21 August. There is no need for comment. A counter-order, which suspended the operations dispatched from the headquarters of the northwest front, was not received by the Russian 1st Cavalry Division. The Russian 1st Cavalry Division set out at midnight, 30 August, and broke through the weak German screen, coming in sight of Allenstein on 31 August. It had a lively fight with the advanced troops of the I Reserve Corps and Landwehr, which had been sent by the commander of the German Eighth Army to Allenstein to oppose the Russian First Army. Seeing himself alone, on 1 September, Gurko went back to the Russian First Army, after having marched his division about 100 kilometers in 36 hours. On the same day the Cavalry Corps reached Wormditt and was stopped by the force of Landwehr and Landsturm. Now the fate of the Russian Second Army was sealed, and the commander of the northwest front ordered the Russian First Army to retire to the line: Deime—Allenburg—Angerburg, in order to obtain a more favorable position to meet the attack which the German Eighth Army was organizing against it.

The cavalry of the Russian First Army retired with it to the east, putting everything to fire and sword. What was left of the cavalry of the Second Army retired toward Ostrolenka and Mlava.

CONCLUSIONS

A review of these happenings and a consideration of the facts at hand leads to the conclusion that the German cavalry in August, 1914, was employed in Eastern Prussia with correct judgment, and that it displayed an activity and a fighting spirit truly exceptional. Numerically inferior, wasted, fatigued, short of rations—nothing impeded it in brilliantly carrying out to the end the tasks which were given it to do. It confirmed again the great usefulness of this arm in a war of move-

ment, screening, reconnoitering, maintaining liaison, fighting, and exploiting a success.

The Russian cavalry, on the other hand, was not employed in accordance with its greater numerical superiority, and as the situations presented themselves for favorable action. No advantage of numerical superiority was taken to make proper use of this cavalry in numerous important occasions, more through the fault of the commanders of the Russian Armies than through the fault of the cavalry commanders themselves. Justly Winogradsky attributes the Russian defeat to the "imperfect employment of the cavalry." Swjetschin writes: "At the beginning of the war the German cavalry was properly trained for their numerous duties . . . great credit to von Bernhardi. In contrast the Russian cavalry, especially in eastern Prussia, appeared only as a vision from another century."

From the facts it is not easy to draw deductions about the future employment of this arm, bearing in mind that many things have changed since 1914 (armament, mechanization, aviation etc.); nevertheless, one can still maintain that in an analogous situation and on similar terrain to that of eastern Prussia, cavalry will always be most useful. Woods, marshes, and a poor network of roads today, as in 1914, will be obstacles to mechanization and motorization. The aviation today, as in 1914, will not have favorable atmospheric conditions for observation every day, and woods will always hinder their observation. At present aviation will be of even greater help to the cavalry than it was in 1914. Where possible, fast mechanization will complete the action, but neither the one nor the other will be able to entirely take the place of cavalry on terrain similar to that of eastern Prussia.

The essential conditions for the best results of cavalry are the same today as in 1914; that is: confidence in the arm, and knowledge of what it can do and what it can not do, on the part of those who employ it, such confidence and knowledge which certainly were not lacking in the commander of the German Eighth Army; cavalry commanders capable of the missions which are assigned them, commanders that are like von Brecht and not like Kahnhusen; organizations, armament; and training of the arm adequate for the tasks which it will be called upon to solve.

INFANTRY AND ARTILLERY FIRE RELATIONSHIP (LIAISON)

By Major V. Meyer, Field Artillery

FOREWORD

We may well ask ourselves how it happens that after so many studies have appeared on infantry-artillery fire relationship (liaison) we have not yet arrived at a solution which is satisfactory to most of the parties concerned. As a matter of fact, we are not only out of step on the matériel needed, but also on the qualities (of matériel) desired. We continue to argue and write without making definite headway.

In this article, we intend to show that such lack of understanding can only be cured when indefiniteness of expression is acknowledged to be the cause; then, having shown the trouble, we will suggest a remedy.

I.—INDEFINITENESS OF LANGUAGE AND ILLUSORY RESULTS

Of the three words, "liaison," "infantry," and "artillery," only the first seems to admit of no misunderstanding. Everybody knows the purpose of liaison, which is to adapt artillery fire to infantry needs, that is, to cover with artillery fire, at the proper time, the targets which the infantry has stated are holding up its advance, or which the infantry desires to see fired upon to stop the enemy's advance. Considering the present means of communication, it is clear that the nearer the artillery is to the infantry, the better it can effect its missions. But no matter how we go about it, the fact remains that the requests (for fire) must reach the men serving the guns. Hence the vogue for accompanying weapons with the infantry.

Up to this point there are no misunderstandings. Where they begin to occur is in the interpretation of the words "infantry" and "artillery." By the term *infantry*, do we mean the squad, section, company, battalion, etc.? And by *artillery*, the piece, the battery, the observation post, the battalion, the regiment, etc.? We forget as a rule to be definite and precise; whence arise our difficulties in solving troubles of fire relationship (liaison), and in finding the matériel best adapted for the purpose, that is to say, matériel suitable for

Abstracted from: *Revue d'Infanterie*, August 1933. "Liaison Infanterie-Artillerie: illusions et réalisations." By General Challéat.

accompanying infantry. For example, it is clear that if the user, without going into full detail, requires from the designer certain matériel, there is a good chance that the designer will turn out something quite unlike what the user wants. Suppose the request is made by one who thinks of the infantry in terms of the squad (*group de combat*) and the designer thinks of it in terms of the regiment, certainly there is room for misunderstanding right there.

The designer might present to the user a 75-mm. gun weighing 900 to 1,100 pounds in firing position and this might be indignantly rejected by the user. On the other hand, if the user had the *regiment* in mind when speaking of the infantry, while the designer had the *battalion* in mind, the user might well feel that the designer was making sport of him if the latter proposed a piece of some hundred pounds in firing position, firing a shell of six or seven pounds at an extreme range of some 2,000 yards.

Empty discussions and much useless correspondence might be avoided if one clearly specified *in each case* what was meant. The addition of a few words in stating the problem would most often obviate volumes of prose and everlasting discussions. It would be enough if one simply added to the words "accompanying matériel" the designation of the unit to be accompanied. Thus one would specify "accompanying matériel of the division, regiment, battalion, etc., of infantry." It would then be understood once and for all that such matériel constitutes *ipso facto*, matériel of direct support of the subordinate unit. Everyone then would understand and talk correctly. Particularly so with military publications, which would not speak of "accompanying matériel" unless the unit to be accompanied was designated.

So, for our purpose, in order to give an example of the method just explained, and to show that in following it we can attain the desired result, we will pass in review the various matériels of accompaniment for the different infantry units. While these weapons must accompany the units, they need not always be close behind them like a dog on a leash. They will often displace by bounds; otherwise they might lose too much valuable time and be delayed in firing because of reconnaissance and occupation of new positions. Certain principles

pertinent to artillery displacing by bounds may be applied to infantry accompanying weapons.

II.—DEFINITE EXPRESSIONS AND RESULTS

Preliminary remarks.—In the following discussion, we will not speak of mechanized regiments which were discussed in the *Revue d'Infanterie*, April 1931. Nor will we discuss under "accompanying matériel" the armored motor vehicles themselves. Since such vehicles are costly and require highly trained specialists, they could not be allotted to any but a small number of infantry units. Nor could they remain long in one position with the infantry—which the latter so often must do in a prolonged attack—without risk of destruction. In fact, the weapons of armored motor vehicles *should be easily removable* so as not to unduly subject the entire machine to destruction.

In our study we will consider the following accompanying matériel, viz., (1) that carried by the men, (2) by animals, (3) by mechanical traction, and (4) on armored automotive vehicles.

Accompanying matériel with the platoon (groupe de combat).—It is unlikely that we can do much with our present matériel considering first, that an automatic rifle or light machine gun of some 20 pounds in weight is not always so easy to transport in the front line, and that its ammunition supply is difficult; second, that the strength of the platoon must remain very limited; and third, that its interests are generally restricted. However, we would like to see the range of the rifle grenade increased to 400 or 500 yards.

Shall we then say that no further progress is to be sought in this sphere? Certainly not. First of all, an improvement in accuracy and effectiveness of the rifle grenade is to be sought, either in the metal itself or by the use of a better explosive charge. These two qualities, accuracy and effectiveness, are particularly to be sought for in these projectiles which though light in weight are hard to transport in any quantity with the front-line platoons.

Then there is the question of future action against tanks. Can we assign organically to the platoon means for antitank defense even at short ranges? Let us discuss this matter under

our next heading "matériel accompanying the infantry company."

Matériel accompanying the infantry company.—This presents serious difficulties. Undoubtedly we can conceive of a grenade-thrower weighing in position some 26 pounds, having a range and effectiveness clearly greater than that of the rifle grenade. The hesitation which exists as to giving such a weapon to the infantry is somewhat understandable. It is a matter of deciding if we are willing to consent to a reduction in the automatic arms of the unit by substituting grenade-throwers, even though in small numbers, with the attendant problem of ammunition supply.

Probabilities of future action of advanced infantry elements against tanks.—Studies on armor piercing possibilities have indicated that first we can hope to get a 7-millimeter weapon, of about 9 or 10 pounds in weight, firing light balls with an initial velocity of 3,600 to 4,500 feet per second, which will perforate about three-tenths of an inch of steel armor at a range of 500 meters. Expert marksmen, well protected behind bags of earth and small portable shields, could then fight tanks right up to the last minute. It is possible to cause so much damage to the tracks and motor as to threaten the tank's mobility. These riflemen would not be spread out uniformly among the platoons, but assigned according to mission and terrain and would advance by bounds under the orders of the company commander. On each new position they would make use of natural and artificial protection.

Matériel accompanying the infantry battalion.—The experience of war and maneuvers has shown that a small weapon weighing about 110 pounds in firing position, carried in three loads, is not too heavy for accompanying missions with an infantry battalion, while at the same time there is comparatively great range and weight of projectile. The Brandt mortar is suitable for this. It has accuracy in range comparable to the 75-mm. gun. Fire adjustment of the mortar is quick and easy at short and medium ranges, but is more difficult at 2,000 yards. The maximum range, 3,000 yards, of the Brandt mortar is suitable for its accuracy of fire and it is a suitable weapon for the battalion, since targets at a greater range will come under the fire of the matériel accompanying

the larger infantry units. The difficulty of ammunition supply of course limits the mortar in the work it can do.

Future action of the infantry battalion against tanks.—We are faced with the following dilemma: either to have a weapon which can protect all elements of the battalion, but which runs the risk of being too heavy to accompany the battalion, or to have a weapon light enough to be established near the company command post, with the chance of its range being insufficient. Thus we see it is difficult to find a weapon which can accompany the battalion and at the same time be effective against tanks. For this purpose, we should have a weapon of about 90 pounds in battery, capable of perforating eight-tenths of an inch of armor at a minimum range of 660 yards.

Materiel accompanying the infantry regiment.—Beginning with the infantry regiments, we can visualize the employment of artillery matériel as actual infantry accompanying weapons. Despite the fact that during the war, under exceptionally favorable circumstances, we see certain 75-mm. guns from the division artillery used as accompanying artillery, we must guard against a weight in firing position of say 2,200 pounds simply because we want a relatively long range. On the contrary, since we desire to use it as much as possible, we ought only to seek a range strictly limited to the accomplishment of its essential missions. Thus the weapon should be as light as possible. It should be understood that if some sacrifice of range or weight is necessary, it must be the weight that is decreased. So, in this attitude of mind, we will study the different characteristics of the matériel normally accompanying infantry regiments.

(1) *Range requirements.*—Because of (a) the disposition in depth of the infantry regiment, some 1,500 yards, (b) the depth of the hostile position, (c) the inadvisability of the artillery in many cases ceasing fire in order to displace, and (d) the effects of adverse winds, the range should be 6,000 to 7,000 yards.

(2) *Weight of projectile.*—We should have a 75-mm. projectile of some 10 pounds in weight, with thinner shell walls than the division artillery projectile.

(3) *Rate of fire.*—The rate should be twenty rounds per minute for short periods.

(4) *Independent angle of site.*—The matériel should be so constructed that the range can be set off independently of the sight, in order to be able to fire with maximum rapidity over a great depth of terrain.

(5) *Reduced charges.*—Three charges are desirable, the second giving a range of some 5,000 yards. However, three charges offer complications from the supply viewpoint, and two might be better. The charges should be semi-fixed, i.e., in a brass cartridge case to keep them clean and dry.

(6) *The carriage.*—The carriage should give a traverse of 45 degrees and an elevation of at least 45 degrees.

(7) *The shields.*—Due to hostile machine-gun fire, which may reach the accompanying gun, ample shields are indispensable.

(8) *Speed of going into and out of positions.*—This should be equal to the division 75-mm. gun. The piece should be able to be moved by hand in emergency.

(9) *Visibility.*—The piece should offer as little visibility as possible, since it should be able to obtain concealment from shallow masks and cover. If located by enemy observers, it is subject to quick destruction, and if its location is known to machine guns, the personnel stands a chance of being decimated in no time.

(10) *Mobility.*—This is a primary consideration; hence the weight should not exceed 900 pounds*, with wheels about 28 inches in diameter. Lightness and size of wheels affect mobility. We might consider increasing the weight to 1,000 pounds with wheels about 36 inches in diameter.

Antitank defense in the future in the infantry regimental echelon.—The matériel whose characteristics have just been enumerated in detail, is satisfactory for bombardment missions (*tirs de bombardement*), but not for piercing armor plate. To fill this need, it would be desirable first to have in addition a second tube of about 1.5 to 1.9 inches, permitting fire at a very high initial velocity with an armor-piercing projectile. The designer can have in view—since it will be necessary to carry tubes of 3-inch and of 1.5 or 1.9 inches—the absorption of all this weight in recoil, to the end of decreasing its velocity and power, and at the same time to be able,

*The weight of the French 75-mm. gun and carriage, fully equipped, is 2,657 pounds.

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in event of surprise, to change almost at once from bombardment firing to that of armor-piercing firing. But this plan offers some inconveniences relative to the employment of the matériel. First of all, the tubes are transported separately and the mobility is not diminished, but going into firing position is less speedy. Another solution is to have the two tubes permanently mounted on the carriage, with the mobility thereby considerably decreased. But mobility is what is wanted. Moreover, the ability to pass from the fire of one caliber to that of another is not as great as one might first think. The position for bombardment fire is generally different from that of armor-piercing fire. The first is executed necessarily almost normal to the front and from defiladed positions, the second, on account of using direct laying and flat trajectory fire, can not, in general, be concealed from the enemy except by firing more or less obliquely to the front. Thus, we prefer the solution which consists in the normal 75-mm. tube mounting, but with the possibility of replacing it by the smaller caliber tube, carried separately. Such is the two-tube solution, either one of which is capable of being used on the same carriage. This gives greater elasticity. It should be well understood, that, according to this solution, the tube of small caliber must furnish all the live force which is allowed by the 75-mm. carriage, and at the same time it must be stable during firing at elevations of minus 2 or 3 degrees.

Defense against low-flying aircraft.—This subject deserves all the more consideration since the air fighter has greater interest in flying low than in flying high in order to escape from the effective antiaircraft artillery fire. Fire against low-flying aircraft is very difficult not only because the matériel must be very light and easily handled in order to follow the target, but also because the corrections must be more accurately computed on account of the displacement of the airplane. The time during which the low-flying airplane presents itself as a target is much shorter than with high-flying aircraft when we consider present fire control apparatus. With low-flying aircraft, range variation has less effect on the flat trajectory of the antiaircraft weapon, and, if the deflection remains constant, the fire is effective. On the other hand, when changes in direction are made, there results a big change in deflection,

and the fire becomes a matter of chance. At all events, the time for firing against low-flying planes being short, the fire must be conducted at a high rate necessitating automatic weapons.

Moreover, because of their high velocity, airplanes are no sooner in a regimental zone of action than they are out of it.

Nevertheless, it is not believed advisable to assign any special matériel to a regiment for antiaircraft work other than that performed by automatic weapons.

III.—PRESENT TREND

To sum up, the present ideas in France are as follows:

- (1) For the platoon, no further developments, except to lengthen the range of the rifle grenade to 500 yards;
- (2) For the company, doubt as to the advisability of giving it a grenade-thrower;
- (3) For the battalion, nothing better than the Brandt mortar is at present desired;
- (4) For the regiment, an accompanying weapon having the characteristics which have been set forth above;
- (5) For all various infantry units, some measure of antitank defense in accordance with the latest technical developments.

It might be advantageous to increase the range of the Brandt mortar to 3,000 yards when used as an accompanying weapon for a battalion, though such range will probably be used only in exceptional cases.

For the regiment, an accompanying weapon of some 7,000 yards is needed, with high mobility.

Lieutenant-Colonel Delmas, in the April 1933 number of the *Revue d'Infanterie*, writes:

"The infantryman knows he is best served by himself; therefore he wants a powerful accompanying weapon of at least 75-mm. caliber, and 4,000 yards range, low to the ground, mobile, motor propelled and armored, able to cover all kinds of terrain and able to fire at large angles. This mortar should pass undisturbed through shrapnel cones, and slip rapidly and unseen behind shallow cover back of the battalion, ready to fire by direct laying on enemy resistance holding up our advance."

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As to the method of transport for weapons accompanying a regiment, a small tractor, protected against bullets coming from its front, would be an advantage. If they can not be given to all regiments, then certainly they should be apportioned to corps to be passed on as need arises to certain infantry regiments for use as accompanying weapons under difficult conditions.

Important considerations.—Should the accompanying matériel for an infantry regiment be served by the infantry or by personnel from the division artillery? Both solutions have their advantages. Certainly the officers and crew must have an expert knowledge of the use of terrain and trajectories, and great skill in handling fire, as well as a thorough knowledge of the characteristics of infantry combat. If these batteries were commanded by the best field artillery captains, the qualities they possess could still be used when they reached higher grades. They would impart throughout their arm the desire to help the infantry above all else. On the other hand, infantry captains who might command such batteries upon becoming majors would no longer have occasion to use these special qualities acquired at the expense of long-continued effort.

The other important question alluded to above is: Should an infantry regiment be accompanied by a matériel that is especially powerful against obstacles? An affirmative answer would seem to be implied, as previous studies have shown.

In other countries, as well, the present trend lies in seeking accompanying matériel for the infantry regiments. The matériel developed by foreign industry is characterized by more or less long ranges, corresponding in a greater or less degree to the weight in battery, their carriages being able to support either the 75-mm. howitzers for bombardment fires, or small weapons (37 to 47 millimeters) for armor-piercing fires. Such matériel is simply called "accompanying matériel" without specifying the infantry unit which they are to accompany. It is not always favorably looked upon by those who, for example, wish for accompanying matériel with a battalion. More specifically, in the April, 1933, number of the *Militärwissenschaftliche Mitteilungen*, there appears the following statement regarding infantry organization: "The subject of infantry cannon has not yet been satisfactorily

solved. So far, the models have been too heavy. There is also the question as to whether infantry provided with antitank and antiaircraft and minenwerfers, needs in addition infantry cannon."

Certainly it is quite clear that there must be a limit to the heaviness of infantry without armor, and thus limit must never be lost sight of in all studies on infantry-artillery fire relationship (liaison).

The 75-mm. matériel has an initial velocity varying generally between 9,900 and 13,200 feet per second, and the 37 to 47-mm. matériel as great velocity as possible for the carriage which is common to the 75-mm. matériel. Fire stability below zero elevations is sought for armor-piercing matériel.

A few of the 75's have four charges, but the majority have three and a few have only two charges.

Elevations are from 40 to 70 degrees and traverses are correspondingly increased.

Naturally, the attainment of certain advantages must be paid for by the sacrifice of others.

In addition to the weapons themselves, foreign industries are closely studying antitank armament of infantry. The March, 1933, number of this review sets forth the main characteristics of the Oerlikon automatic antitank weapon. Its caliber is 20 millimeters, its weight 73 pounds, and it can be taken apart in three loads of about 25 pounds each. Its total length is 1.45 meters with a tube of 75 centimeters. It can thus easily be assigned to a battalion, and in an emergency, to the company. It fires with an initial velocity of about 1,800 feet per second, with an armor-piercing projectile of 142 grams.

Its rate of fire can reach forty rounds per minute with charges of 5, 10, or 15 cartridges.

According to a report, it can perforate six-tenths of an inch of armor at 500 meters and eight-tenths of an inch at 130 meters. The author of this report states: "If actually with a weapon weighing 73 pounds we can get a penetration of six-tenths of an inch at 500 meters, the days of fast and insufficiently armored tanks are numbered." But will these fast tanks be insufficiently protected by armor, and will not the bullets strike the armor plate at a certain angle of incidence?

Abstracts—Foreign Articles

In any event, we are really entering that phase on the battlefield where it becomes a fight between projectiles and armor.

CONCLUSIONS

We can see from the above discussion, that thanks to precise and accurate language, and to the knowledge of the technical possibilities of the times, the subject of infantry-artillery fire relationship becomes considerably simplified. Misunderstandings disappear, particularly on the subject of the characteristics of matériel; divergence of views between the branches can be reduced to certain details regarding matériel, and to certain differences as to the desirability of employment and assignment of definite armament.

Today, the idea everywhere is to give infantry as powerful means of defense against tanks as possible, and to produce efficient accompanying matériel for infantry regiments.

For antitank defense, it is desirable to pursue all processes capable of increasing the perforating power of man-carried weapons, and other weapons of small caliber, without appreciably increasing the weight.

As to the accompanying gun for the infantry regiment, the problem as it stands at present can be solved in a satisfactory manner, for our plants can today turn out 75-mm. matériel, with a range of 7,000 yards, and a weight in firing position of 880 to 990 pounds, a cannon which will satisfy all the conditions indicated in this study.

UNIVERSITY OF WISCONSIN-MADISON

Section 3
DIRECTORY OF PERIODICALS

Included in this directory are only those periodicals from which articles have been selected.

See also, Section 8, "List of Periodicals Indexed and Key to Abbreviations."

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Section 4

CATALOG OF SELECTED PERIODICAL ARTICLES

This section catalogs the articles selected from Library periodicals for the current quarter. Periodicals in this Catalog are arranged alphabetically.

ARMY AND NAVY JOURNAL

19 May 1934

- (1) INCREASE IN ARMY PUT UP TO ADMINISTRATION
- (2) MARINE PROMOTION BILL SPEEDS THROUGH HOUSE
- (3) HOUSE APPROVES NAVY LINE PERSONNEL BILL
- (4) ARMY RETIREMENTS

26 May 1934

- (5) ARMY PREPARES FOR LARGEST PEACE-TIME MANEUVERS
- (6) REJUVENATED "B" BOARD MAY SPEED ARMY PROMOTIONS
- (7) CONSIDER ARMY INCREASE
- (8) DEVELOPMENT OF NAVAL AIRCRAFT
- (9) U.S. MARINE CORPS. Major General Russell
- (10) REPORT NAVY PROMOTION BILL

2 June 1934

- (11) WAR LEADER ENDORSES MORE ARMY PERSONNEL

9 June 1934

- (12) PAY PERIOD ADVANCES THREATENED BY RULING

16 June 1934

- (13) DATA ON ARMY INCREASE REVEALED BY COMMITTEE
- (14) DECISION ON PAY FREEZE FROWNS ON IN CONGRESS

23 June 1934

- (15) HOUSE GROUP ASKS REMOVAL OF GENERAL FOULOIS
- (16) PAY INCREASE RETURN ASSURED BY CONGRESS
- (17) NEW ARMY FOREIGN SERVICE TOUR POLICY

30 June 1934

- (18) DEPARTMENT PUBLISHES ARMY "B" BOARD DATA

7 July 1934

- (19) CHIEF OF STAFF DIRECTS ARMY PROMOTION STUDY

14 July 1934

- (20) ARMY TRAINING SYSTEM REVISION TO BE STUDIED

21 July 1934

- (21) ARMY BOARDS DRAFTING PLANS FOR PROMOTION
- (22) BAKER AIR BOARD URGES MORE FIGHTING PLANES
- (23) COST OF LIVING ON UP-GRADE

28 July 1934

- (24) AIR BOARD REPORT MAY SPEED PLANE PROGRAM
- (25) CONCLUSIONS AND RECOMMENDATIONS OF WAR DEPARTMENT AIR BOARD

ARMY AND NAVY REGISTER

19 May 1934

- (1) MARINE CORPS PROMOTION BILL
- (2) NAVY PROMOTION BILL

26 May 1934

- (3) THE FLEET REVIEW
- (4) NAVY STAFF EQUALIZATION BILL

2 June 1934

- (5) ARMY INCREASE URGED

9 June 1934

- (6) ECONOMY LAW AND PROMOTION
- (7) NAVY SHIPS AND AIRPLANES
- (8) ARMY PROMOTION

16 June 1934

- (9) "FIELD DUTY" CONSTRUED

23 June 1934

- (10) SERVICE PAY AND ECONOMY LAW
- (11) ARMY AIR CORPS

30 June 1934

- (12) PROMOTION IN THE ARMY
- (13) ARMY CLASS "B" PROCEDURE
- (14) FRANCE'S NEW FORTIFICATIONS

7 July 1934

- (15) ARMY PROMOTION
- (16) STRENGTH OF THE NAVY
- (17) C.C.C. ENROLLS NEW FORCE

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- (18) MODERNIZATION OF THE ARMY

21 July 1934

- (19) Balloon races

28 July 1934

- (20) ARMY AIR CORPS COMMITTEE REPORT

ARMY, NAVY AND AIR FORCE GAZETTE (Great Britain)**3 May 1934**

- (1) THE INCITEMENT TO DISAFFECTION BILL. Major Parkes
 (2) CONTROL IN THE MIDDLE EAST. Major-General Rowan-Robinson
 (3) THE FINANCE OF GERMANY'S PREPARATION FOR WAR

10 May 1934

- (4) AN AFGHAN ACCOUNT OF THE BATTLE OF MAIWAND. Lieutenant-Colonel C. Murphy
 (5) THE SOLDIER AND HIS RESPIRATOR. Major P. Murphy

17 May 1934

- (6) THE NEXT FIVE YEARS—THE FUTURE OF THE ENGINEER ARM. Major Worsfold
 (7) TANKS IN THE CHACO WAR
 (8) AVIATION IN NEW ZEALAND. Lieutenant-Colonel Smythe

24 May 1934

- (9) SOUTH AFRICA'S DEFENCE. Statement of Government policy
 (10) MYSTERY EXPLOSIONS IN WARSHIPS. Captain Cameron

31 May 1934

- (11) THE STRATEGY OF THE WESTERN PACIFIC. By "Navalis"
 (12) MOBILITY IN MOUNTAIN WARFARE. Major-General Rowan-Robinson
 (13) TANKS IN FOREST WARFARE. A tank attack in the Chaco war

7 June 1934

- (14) THE COMPENSATION OF WAR SUFFERERS. Captain Spicer
 (15) WAR DEBTS AND AMERICA. Blacker
 (16) JAPAN, CHINA AND INTERFERENCE. Brigadier-General Bruce

21 June 1934

- (17) FRANCE'S AIR FORCE IN HER COLONIES. From a Correspondent

28 June 1934

- (18) TRAINING REGULATIONS, 1934. I—THE WHITEHALL HERESY. Captain Kennedy
 (19) THE TRIUMPH OF CONVOY 1917-18. Fayle

5 July 1934

- (20) TRAINING REGULATIONS, 1934. II—BATTLE THE BLOODY WAY. Captain Kennedy
 (21) GASSENGER THE NAVY. Major Murphy

12 July 1934

- (22) TRAINING REGULATIONS, 1934. III—ARMY AND INDUSTRY—LEADERSHIP. Captain Kennedy

19 July 1934

- (23) MR. WICKHAM STEED'S "REVELATIONS." Abshagen
 (24) THE SEDITION BILL: A SAILOR'S VIEW. Captain Spicer

ARMY ORDNANCE**May-June 1934**

- (1) "THE GENIUS OF THE FRENCH ARMY." Major General Conner
 (2) HOW ARMIES ARE MECHANIZING. Lieutenant Icks
 (3) BOMBS VS. PROJECTILES. RELATIVE VALUE OF THESE WEAPONS IN NAVAL WARFARE. Lieut. Commander Ramsey
 (4) PERCUSSION RIFLES. THIRD IN THE LINE OF EVOLUTION OF RIFLED GUNS. Captain Dillin
 (5) CURVE-PLOTTING THE ART OF WAR. Colonel Spaulding
 (6) PROOF TESTS AND PROOF MARKS. IV: PRACTICES OF MANUFACTURERS IN THE UNITED STATES. Lieutenant-Colonel Goddard

July-August 1934

- (7) PEACE, REAL AND UNREAL. "DISARMAMENT" PROPOSALS AND "THE NEXT WAR." Moore
 (8) SHELLS, SHRAPNEL AND STATECRAFT. GREAT BRITAIN'S AMMUNITION SUPPLY IN THE WORLD WAR. Colonel Turner, British Army
 (9) THE FIGHTING MAN. HIS ATTRIBUTES ARE COURAGE, HONOR AND PRUDENCE. Nickerson
 (10) GAS DEFENSE. OUR CIVILIAN POPULATION SHOULD KNOW ABOUT IT. Colonel Wagner
 (11) INFANTRY WEAPONS. THE STUDY AND TEST OF NEW ARMAMENT DEVELOPMENTS. Lieutenant-Colonel Kelley

Periodical Articles—Catalog

- (12) A CHRONICLE OF ORDNANCE. THE PLACE OF EXPLOSIVES IN THE ANNALS OF DEFENSE. Lieut.-Colonel Simons
- (13) PROOF TESTS AND PROOF MARKS. V: PRACTICES IN THE U.S. MILITARY SERVICE. Lieut.-Colonel Goddard

ARMY QUARTERLY (Great Britain)
July 1934

- (1) DISCUSSION OF PRESENT NAVAL, MILITARY AND AIR COMMITMENTS AS APPLIED TO BRITISH DEFENCE POLICY OF TO-DAY. (Military prize essay, 1934) Captain Haslam
- (2) NIVELLE: A REVIEW OF THE FRENCH OFFICIAL HISTORY OF THE WAR. (Tome V, Vol. I)
- (3) FOCH'S PIVOT AT THE BATTLE OF THE MARNE, 1914. THE OPERATIONS OF THE MOROCCAN DIVISION
- (4) "WHO SHALL DECIDE WHEN DOCTORS DISAGREE?" Major-General Bird
- (5) "THE OTHER SIDE OF THE HILL." No. XII. The night attack at Landrecies: 25th of August, 1914.
- (6) LOOKING AHEAD—AND BACK. Captain Liddell Hart
- (7) THE HEALTH OF NAPOLEON DURING THE WATERLOO CAMPAIGN. Rose
- (8) FOUR MEN ON THE RIDGE. ECHOES OF A FORGOTTEN CONTROVERSY. IV—Alex Taylor. Lieut.-Colonel Thackeray
- (9) WHAT FORCES CAN RUSSIA CONCENTRATE IN THE FAR EAST? Lieut.-General Golovin
- (10) THE BATTLE OF THE MARNE, 8TH AND 9TH OF SEPTEMBER, 1914. The personal experiences of Hans Koeppen
- (11) GERMAN TANKS IN ATTACK IN 1918
- (12) THE MESOPOTAMIAN CAMPAIGN THROUGH TURKISH SPECTACLES

BULLETIN BELGE DES SCIENCES MILITAIRES (Belgium)

BY MAJOR C.A. WILLOUGHBY, INFANTRY

January 1934

- (1) PAGES D'HISTOIRE DE L'ARMÉE BELGE AU COURS DE LA GUERRE 1914-1918.—RECONNAISSANCES ET PATROUILLES DE CAVALERIE (1914-1918). [History of the Belgian Army during the World War, 1914-1918.—Cavalry patrols on reconnaissance.] (I)

Reports by junior cavalry officers, in charge of patrols operating late

in July 1914, observing German troops. Their reports were sent in by carrier pigeons; one of the patrols was cut off and forced into Holland territory; the other escaped. The patrols consisted of twenty-four men; the author believes this to be too large a number, rendering concealment difficult. He makes a distinction between "combat patrols" and "observation patrols."

- (2) TRANSPORTS PAR AUTOMOBILES. [Motor transport movement.] Major Gilbert and Captain Colette
A map problem for the transport of an army corps by trucks.
- (3) HISTOIRE MILITAIRE DES BELGES. [Military history of Belgium.] (I) Lieut.-Colonel Bouha
Extracts from a standard work by Vicomte Terlinden.
- (4) MÉTHODE DE RÉSOLUTION DES PROBLÈMES DE TIR INDIRECT AUX DISTANCES RÉDUITES. [Indirect machine-gun fire at reduced ranges.] Dieuaide
- (5) LA VENTILATION DES ÉCURIES. [Ventilation of stables.] Major Meugens

February 1934

- (6) PAGES D'HISTOIRE DE L'ARMÉE BELGE AU COURS DE LA GUERRE 1914-1918.—RECONNAISSANCES ET PATROUILLES DE CAVALERIE (1914-1918). [History of the Belgian Army during the World War, 1914-1918.—Cavalry patrols on reconnaissance.] (II)

Continuation of previous article. Four reconnaissance missions carried out in August and September 1914; transmission of reports was by carrier pigeons. A curious item is noted in the reports that the German columns kept entirely to the main highways without employing flank guards; this may be a peacetime habit, or an expression of superiority?

- (7) HISTOIRE MILITAIRE DES BELGES. [Military history of Belgium.] (II) Lieut.-Colonel Bouha
Continuation of previous series, covering the history of the Belgian Army from the eighteenth century to the present day.
- (8) L'OBSERVATION. [Observation.] Major Adam
An article dealing with the duties and employment of infantry obser-

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vers, and the viewpoint of higher command echelons.

- (9) L'ARTILLERIE DE FORTERESSE AU SERVICE DE L'ARMÉE DE CAMPAGNE. [Fixed fortifications and field armies.] Captain Gerard

A discussion of the cooperation between fixed fortification artillery, firing from fixed emplacements, and a neighboring field army.

- (10) L'ENTRETIEN DU SOLDAT DANS LES ARMÉES ROMAINES. [Maintenance of Roman soldiers.] Captain Avraet

An historical study on the cost of maintenance of the Roman soldier, pay, clothing, equipment, and rations.

March 1934

- (11) PAGES D'HISTOIRE DE L'ARMÉE BELGE AU COURS DE LA GUERRE 1914-1918.—RECONNAISSANCES ET PATROUILLES DE CAVALERIE (1914-1918). [History of the Belgian Army during the World War, 1914-1918.—Cavalry patrols on reconnaissance.] (III)

A continuation of a previous article, containing the reports of small cavalry patrols in 1914 and 1918; on the latter occasion, the patrols were to maintain contact with an enemy in retreat.

- (12) AIDE-MÉMOIRE À L'USAGE DU CHEF DE SECTION DE MI.—I. LA SECTION DE MI. DANS LA DÉFENSIVE. [Employment of machine guns in defense.] Lieutenant Melon

Handbook for chiefs of section, with special reference to situations in a defensive.

- (13) DESCRIPTION ET MODE D'EMPLOI DE L'ABAQUE "DIEUAIDE" POUR LA RÉSOLUTION DES PROBLÈMES DE TIR INDIRECT DES MITRAILLEUSES. [Indirect machine-gun fire.] Dieuaide

Description of firing tables, designed by Sergeant Dieuaide to facilitate the calculation of firing data in indirect fire.

- (14) APPRÉCIATION DES DISTANCES À LA VUE. [Estimation of distances.] Lieut.-General Grade

- (15) LA FORMULE DE LA VICTOIRE. [The formula for victory.] Captain Callens

This article refers to a similar study in the *Militär-Wochenblatt*, comparing the trend of military opinion of various foreign countries. It is noted that Italy and Great

Britain have gone in for an independent Air Force. France is in a state of transition but is coming around to the same view.

This brings into sharpest relief the important question of defense against aerial attack. There are alarmists who foresee incredible horrors in the attack against cities. While it is questionable that attacks against cities would be undertaken, as a matter of humanity, it is nevertheless a practicable possibility. The defense of crowded cities against bombs is impossible, especially incendiary bombs; protection against gas is more easily provided.

Another chapter covers the problem of mechanization and motorization. Great Britain has been a pioneer in this field. France is inclined to follow the lead of its neighbor but is apparently not committed to a mechanized army at this time. As regards tanks, the evolution of the navies is indicative of the race between gun and armor; this must end in a victory for the antitank gun, since the weight of armor affects the speed of the tank and there is a definite limit to what present roads, bridges, and railways can carry.

There is also a discussion of the relative merits of a small professional army, a combination of sea, land, and air forces under a central ministry of defense, questions of blockade, contraband, and the freedom of the seas.

CANADIAN DEFENCE QUARTERLY
(Canada)

July 1934

- (1) SOUTH AFRICA'S DEFENCE
- (2) AN APPRECIATION OF THE RUSSO-JAPANESE SITUATION. Lieutenant Goforth
- (3) WHAT PRICE MECHANIZATION? Captain Boulter
- (4) PIONEER FLYING IN THE CANADIAN SUB-ARCTIC. Flight Lieutenant Fulerton
- (5) THE FUTURE OF GERMANY. Major Scudamore
- (6) THE HARBIN OPERATIONS. Niko-laieff
- (7) "DETROIT AND MIAMI." Lieut.-Colonel Pearkes

Periodical Articles—Catalog

- (8) RECENT EVENTS IN EUROPE. By the Editor
- (9) SUPPLY OF JAPANESE OFFICERS FOR THE MANCHUKUO ARMY

CAVALRY JOURNAL

May-June 1934

- (1) RICHARD MENTOR JOHNSON: THE FATHER OF AMERICAN CAVALRY. Pratt
- (2) THE FIRST MOTORIZED CAVALRY. Colonel Phillips
- (3) THE CAVALRY'S PROBLEM. Major Mariot, French Army
- (4) THE MODERN SEAT. Major Chamberlin
- (5) CHINESE SOLDIERS. First Lieutenant Epperson
- (6) THE CIVIL WAR CUSTER. Major Hansom
- (7) JUNGLE WARFARE. Cary

CAVALRY JOURNAL (Great Britain)

July 1934

- (1) CAVALRY IN FRANCE, AUGUST-NOVEMBER, 1918. Lieut.-Colonel Preston
- (2) THE SILLADAR CAVALRY OF INDIA. By "Thistle"
- (3) "THE FALL OF BHURPORE, 1826." By "Zarif"
- (4) THE MENACE TO PARIS, AND CAVALRY ACTION OF NERY, 1ST SEPTEMBER, 1914
- (5) DARFUR. Major Maydon
- (6) CAVALRY IN THE GREAT WAR. THE BATTLE OF THE AISNE. Part IV. Lieut.-Colonel Martin
- (7) CAVALRY AND TANKS. By "A.F.V."

CAVALRY SCHOOL MAILING LIST

15 June 1934

- (1) CAN WE SHOOT DOWN THE LOW-FLYING ATTACK PLANE?

CHEMICAL WARFARE

April 1934

- (1) TACTICAL USES OF CHEMICAL WARFARE GASES AND EXAMPLES OF THEIR APPLICATION DURING THE WORLD WAR. Captain Pickett
- (2) POST-WAR DEVELOPMENTS IN THE MEDICAL ASPECTS OF CHEMICAL WARFARE. Major Koontz
- (3) MINIATURE RANGE BUILT BY FIRST CHEMICAL REGIMENT AT EDGEWOOD ARSENAL, MARYLAND. First Lieutenant McLeod
- (4) FIRING CHEMICAL MUNITIONS STATICALLY. Captain Barker

COAST ARTILLERY JOURNAL

May-June 1934

- (1) ANTIACRAFT DEFENSES: THEIR DEVELOPMENT DURING THE WORLD WAR. (Part I) Major Englehart
- (2) JUNGLE WARFARE. (Part I) Cary
- (3) ELIMINATION, PROMOTION, OR WHAT HAVE YOU
- (4) TRAINING FOR MOBILIZATION. Captain Albright
- (5) HOW THE DISARMAMENT OF GERMANY CAME TO PASS. Major Johnson
- (6) RIFLE ANTIACRAFT NOTES OF REBEL FORCES. As told to Lieutenant Gill
- (7) CHANGES IN TARGET PRACTICE INSTRUCTIONS. Captains McCroskey and Harris
- (8) HISTORY OF GUNNERS' EXAMINATIONS IN THE 240TH C.A. (TD). Captain Dow

ESERCITO E NAZIONE (Italy)

BY CAPTAIN F. DURING, INFANTRY

January 1934

- (1) PROBLEMI DELLA SOLIDARIETÀ GUERRIERA—ESERCITO E AVIAZIONE. [Army and aviation.] Sarfatti
- Army and aviation must work as a team in order to achieve results. Mutual understanding, good feeling, good communication, and knowledge of the weapons of all arms are necessary to bring about this teamwork. The author gives the following strategic missions to the aviation: Interruption of enemy lines of communication, attacking enemy reserves, pursuit, covering a withdrawal, reconnaissance, and missions as mobile army reserve.

- (2) UN GRUPPO DIVISIONALE NELL'ATTACCO IN TERRENO MONTANO. [A battalion of division artillery in mountain warfare.] Camera

A tactical exercise in which oral orders given to the artillery to support the attack of a battalion of infantry in an attack are cited. Communication between artillery and infantry is by radio.

- (3) PASSATO E PRESENTE—DAL VOLONTARISMO DEL RISORGIMENTO ALLA MILIZIA FASCISTA. [From volunteers to Fascistic militia.] Rossi

February 1934

- (4) UN BATTAGLIONE NELL'ATTACCO. [A battalion in an attack.] Balzani

A tactical exercise of a battalion, reinforced by a platoon of accompanying guns and a machine-gun company, and supported by a battalion of artillery in an attack. After 30 minutes artillery preparation, during which time the front-line companies are working up to the line of departure, the attack begins. Communication is by telephone as far as the line of departure. In order to detect any possible gas, an officer-patrol advances ahead of the front-line troops. The company making the main effort is supported by six platoons of machine guns.

- (5) **INTERRUZIONI STRADALI E FERROVIARIE—IMPIEGO DI UNA COMPAGNIA GENIO.** [Use of an engineer company in the destruction of roads and railroads.] Morera

A battalion, reinforced by a battalion of artillery, two troops of cavalry, and one engineer company, fighting a delaying action. In order to gain time, the engineer company is ordered to destroy three bridges and a viaduct. Reconnaissance, division of work, and technical calculation are given in detail.

- (6) **DA VERSAGLIA A LOSANNA—LE RIPARAZIONI TEDESCHE.** [From Versailles to Lauzanne. The German reparation.] Bartoli

March 1934

- (7) **L'ESERCITO NEL FASCISMO.** [The army under Fascism.] Fantini

The following are the missions of the Italian Army: (1) Leaders and men must reach the highest level of efficiency; (2) Lessons of the late war must be thoroughly studied in order to prepare properly for the next war; (3) It must be the nucleus for a citizens' army. The Fascists will give the army all means necessary in order to bring about the fulfillment of its missions.

- (8) **LA ORGANIZZAZIONE DELLE NAZIONI PER LA GUERRA—VI. LA ROMANIA.** [The organization of nations for war: Rumania.] Franchini

- (9) **COSTRUZIONI E PROGRAMMI NAVALI.** [Naval programs and construction.] Accorsi

- (10) **ESERCITAZIONE TATTICA A FUOCO DI FANTERIA E ARTIGLIERIA.** [Combat practice of combined arms.] Peccio

FIELD ARTILLERY JOURNAL

May-June 1934

- (1) THE REGULAR COURSE, THE FIELD ARTILLERY SCHOOL. Major Parker
- (2) MOBILITY INSTRUCTION IN NEWLY ORGANIZED TRUCK-DRAWN FIELD ARTILLERY UNITS. Major Lewis
- (3) LE CATEAU, 26 AUGUST, 1914. Major Williams
- (4) EXPERIENCES OF A TRUCK-DRAWN NATIONAL GUARD FIELD ARTILLERY REGIMENT. Lieut. Colonel Weiler
- (5) BREITENFELD—THE BATTLE THAT CHANGED THE WORLD. Pratt
- (6) LATERAL CONDUCT OF FIRE. Captain Park
- (7) "GABRIEL OVER THE WHITE HOUSE"

FIGHTING FORCES (Great Britain)

June 1934

- (1) SKOPJE: AN EXPLOIT OF THE FRENCH CAVALRY. Falls
- (2) A TRIP IN THE SINAI DESERT. By "Track Plate"
- (4) ATTACHMENTS TO OTHER ARMS. Lieutenant Hazlerigg

INFANTRY JOURNAL

May-June 1934

- (1) THOUGHTS OF AN INFANTRYMAN. Major General Croft
- (2) KEEPING THEM INTERESTED. THE RELATIONSHIP OF P.M.S. & T. TO R.O.T.C. GRADUATES. Lieut. Colonel Ristine
- (3) STRATEGY AND SURGERY. Colonel Blech
- (4) JUNGLE WARFARE. (I) Cary
- (5) RIFLE ANTI-AIRCRAFT NOTES OF REBEL FORCES. As told to Lieutenant Gill, C.A.C.
- (6) LEADERSHIP. Part I. Brigadier General Miles
- (7) TRAINING FOR MOBILIZATION. Captain Albright
- (8) HOW THE DISARMAMENT OF GERMANY CAME TO PASS. Major Johnson
- (9) CLOSE ORDER DRILL. Lieut. Colonel Lentz
- (10) THE .22 HORNET AS A SNIPER'S RIFLE. Landis
- (11) ELIMINATION, PROMOTION, OR WHAT HAVE YOU

July-August 1934

- (12) CHEMICAL WARFARE TRAINING. Lieut.-Colonel de Roulet
- (13) THE DEPARTMENT OF EXPERIMENT. Lieut.-Colonel Kelley

Periodical Articles—Catalog

- (14) TRAINING, EDUCATION AND PROMOTION. Lieut.-Colonel Lentz
- (15) JUNGLE WARFARE. (II) Cary
- (16) DECEPTION IN WAR. Major Bonham
- (17) LEADERSHIP. Part II. Brigadier General Miles
- (18) REDUCING THE DOUGHBOY'S LOAD. Staff Sergeant DeAgro
- (19) MORE CRIES FROM THE WILDERNESS
- (20) WHAT ABOUT THE BAYONET? Lieutenant Castner
- (21) THE MIRACLE. Captain Laner

JOURNAL OF THE ROYAL ARTILLERY (Great Britain)

July 1934

- (1) "WHAT EFFECT ARE MODERN DEVELOPMENTS IN AVIATION, ARMOURED AND MECHANICAL VEHICLES, AND AUTOMATIC WEAPONS LIKELY TO HAVE ON THE TACTICAL EMPLOYMENT OF ARTILLERY; . . .?" ("Duncan" Silver Medal Essay, 1933-34.) Major Benfield
- (2) HORSE ARTILLERY AND MECHANIZATION. Major Fiennes
- (3) TACTICS AND TOPOGRAPHY. Major Body
- (4) ARTILLERY SURVEY IN THE TERRITORIAL ARMY. Major Dickson
- (5) EXTRACT FROM "THE CONDUCT OF WAR." V.—THE BATTLE OF BORNY. Marshal Foch. (Translated by Captain Kieran)
- (6) WHAT TO FLY. (YET ANOTHER AERONAUTICAL PROBLEM!) By "Roulette"
- (7) SOME ASPECTS OF SPECIALIST TRAINING IN UNITS OF THE ROYAL ARTILLERY, TERRITORIAL ARMY. Lieutenant Owen
- (8) SOUTH AFRICA AS A PEACE STATION—1908. By "Pollaniska"
- (9) THE FORMATION OF A BATTERY. Lieut.-Colonel Freeland
- (10) SOME MUSINGS ON THE BATTLE OF LEWES. A.D. 1264. Lieut.-Colonel Dimmock

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION (Great Britain)

May 1934

- (1) ". . . CHANGES REQUIRED IN THE PRESENT PEACE-TIME ORGANIZATION, TRAINING AND EQUIPMENT OF THE TERRITORIAL ARMY TO PRODUCE WITHIN THE SHORTEST TIME A FIELD ARMY . . ." [Gold

- Medal Essay (Military) 1933.] Brevet-Major Clarke
- (2) COAL VERSUS OIL FOR THE NAVY. Vice-Admiral Skelton
- (3) THE DEVELOPMENT OF THE FLEET AIR ARM. Wing Commander Acland
- (4) WEAPONS OR WAR. Brevet Lieut.-Colonel Calthrop
- (5) AIR FORCES IN THE GREAT WAR: SOME STRATEGICAL LESSONS. Major Stewart
- (6) THE VALUE OF OBSOLETE WARSHIPS AND WEAPONS. Commander Rowbotham
- (7) ECONOMIC ASPECTS OF EMPIRE DEFENCE. Fayle
- (8) THE DEFENCE POLICY OF THE UNITED STATES. Phayre
- (9) ARMIES OF THE AIR: A FRENCH VIEW
- (10) LAND MINING IN FRONTIER WARFARE. Brigadier-General Mathew-Lannow
- (11) DISARMAMENT NEGOTIATIONS
- (12) THE PROBLEM OF THE SAAR
- (13) THE FAR EASTERN SITUATION
- (14) THE WAR IN THE CHACO

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION OF INDIA
(Great Britain—India)

April 1934

- (1) THE BATTLES OF GENERAL SAMSONOV'S ARMY ON THE 26TH, 27TH AND 28TH AUGUST 1914. Lieut.-General Golovine
- (2) PACIFISM V. MILITARISM. Colonel Dickins
- (3) CHINA'S CASE. Captain Swann
- (4) INFANTRY TRAINING. Major Westmorland
- (5) WHAT IS MILITARY GENIUS? Major Pemberton
- (6) MODERN ATTACK. Major Robertson
- (7) SHADE ON SHENANDOAH. Captain Gardiner
- (8) LIGHT INFANTRY A HUNDRED YEARS AGO. Captain Gibbs

KRAFTZUG (Germany)

BY CAPTAIN F. DURING, INFANTRY

January 1933

- (1) MASSEN MODERNSTER KAMPFWAGEN GIBT ES IN FREMDEN HEERNE. [Modern tanks in foreign armies.]
- (2) GEDANKEN ÜBER AUFKLÄRUNGSMITTEL UND AUFKLÄRUNG BEI KAMPFWAGENVERBÄNDEN. [Thoughts about means for reconnaissance and reconnaissance by tanks.]

The author believes that small tanks should not be used on reconnaissance missions, as they are not fast enough to compete with light and medium tanks and therefore would not be able to bring back reports of the result of reconnaissance. However, foreign, especially British views, differ from this idea.

- (3) NEUES VON DER HEERESMOTORIZIERUNG. [Development of motorization in foreign armies.]
- (4) ITALIENISCHER SCHLEPPER MIT GASGENERATORMOTOR. [Italian trucks with gas generating motor.]

February 1933

- (5) DER HEUTIGE STAND DER MOTORIZIERUNG IN DER DEUTSCHEN LANDWIRTSCHAFT. [The present situation of motorization in the German industry.] Seidler
- (6) DIE ENTWICKLUNG DER KAMPFWAGEN-ABWEHR UND IHRE RÜCKWIRKUNG AUF DIE KAMPFWAGEN. [The development of defense against tanks and its effect on tanks.]

The attack by mechanized units has somewhat changed the system of defense. Since mechanized units do not attack in depth as does the infantry, but endeavor to overcome the defensive weapons before they can become effective, it is believed necessary to use automatic 37-mm. or 47-mm. guns. The rapid fire of such weapons will do much to make the defense more formidable against an attack by mechanized units.

- (7) NEUES VON DER HEERESMOTORIZIERUNG. [Development of motorization in foreign armies.]

March 1933

- (8) KAMPFWAGEN UND ARTILLERIE. [Tanks and artillery.]

The author discusses the cooperation of the artillery in an attack by tanks and the defense by artillery against such an attack. Due to the rapidity of a tank attack, artillery can only assist the tank, if it is motorized and can follow the tank sufficiently close to fire at close range at suitable targets. The fire of artillery in position should never be used for the support of a tank attack, as it would be a waste of ammunition. In the defense it would be faulty to have artillery fire on fast moving tanks. Only if tanks have to pass through a defile

or over a bridge is artillery fire justified. But in this case the plan of the tank attack is faulty. To use indirect fire against attacking tanks would be a crime against our own infantry. In case tanks approach the artillery position, the batteries should protect themselves by direct fire on the tanks. Only a direct hit is certain of result.

April 1933

- (9) MOTORISIERTE ARTILLERIE IN AMERIKA. [Motorized American artillery.]

May 1933

- (10) DER HEUTIGE STAND DER MOTORIZIERUNG IN DER DEUTSCHEN LANDWIRTSCHAFT. [The present situation of motorization in the German industry.] Seidler

June 1933

- (11) DIE KAMPFWAGEN-ENTWICKLUNG IN DEN VEREINIGTEN STAATEN VON NORDAMERIKA. [The development of tanks in the United States.]

July 1933

- (12) DIE ENTSTEHUNG DER DEUTSCHEN KRAFTFAHRTTRUPPE UND IHRE ENTWICKLUNG BIS ENDE 1915. [The origin of the German motorized troop and its development by the end of 1915.]

A reprint of parts of the ninth volume of the Reichsarchiv.

- (13) KAMPFWAGEN IN GEBIRGSKRIEG? [Tanks in mountain warfare.]

Mountainous terrain hinders the mobility of tanks and such terrain is not suited for tanks or mechanized units. Tanks may be used, however, in close cooperation with infantry and artillery.

August 1933

- (14) EISENBAHNPANZERZÜGE. [Armored railroad trains.] (I) Major Pirner, Retired

In this installment the author discusses the origin, the employment, the armament, interior communications, and technical principles of armored railroad trains.

- (15) DIE KAMPFWAGEN-ENTWICKLUNG IN ENGLAND. [The development of armored motor vehicles in England.]

The latest British medium tank is the Vickers C, weighing 16 tons. This tank is armed with one cannon, three super-heavy or heavy machine

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guns, and has a speed of about 28 miles per hour. England has ceased its experiments with a heavy tank, believing that the medium tank can take over the role of a heavy tank. The latest model of a small tank has a speed of about 30 miles per hour and weighs only 2 tons. It has a movable turret and is used in combat against light and medium tanks. The light tank is still under development. The present model has one turret with one cannon and two machine guns.

The engineers have a combat car which is used to assist in building bridges, when a bridge has to be built in face of heavy enemy fire. It can also be used to put a bridge, which has been built previously, into position.

The armored trucks for transporting infantry are part of the equipment of the British Army. Armored communication cars, carrying radio equipment, are fully developed.

- (16) DER EINSATZ DEUTSCHER KAMPFWAGEN-VERBÄNDE IN OFFENSIVER ABWEHR AN DER WESTFRONT, OKTOBER 1918. [The employment of German tank units on the Western Front, October 1918.] (I)

The author discusses the employment of German tanks and the capture of French and British tanks near Cambrai.

September 1933

- (17) DER EINSATZ DEUTSCHER KAMPFWAGEN-VERBÄNDE IN OFFENSIVER ABWEHR AN DER WESTFRONT, OKTOBER, 1918. [The employment of German tank units on the Western Front in October 1918.] (II)

October 1933

- (18) DIE KAMPFWAGEN-ENTWICKLUNG IN FRANKREICH. [The development of tanks in France.]

France has not followed the trend of the times in the development of tanks as to speed, mobility, and radius of action as has England and America. France has two super-tanks, each weighing 700 tons, to be used as tank forts.

- (19) DER EINSATZ DEUTSCHER KAMPFWAGEN-VERBÄNDE IN OFFENSIVER ABWEHR AN DER WESTFRONT, OKTOBER 1918. [The employment of German tank units on the Western Front in October 1918.] (III)

November 1933

- (20) DIE FRANZÖSISCHEN HERBSTMANÖVER 1932 UND 1933. [The French maneuvers, 1932 and 1933.]

A short résumé of the French maneuvers in 1932 and 1933. For details of this maneuver see RML No. 51, page 5, and RML No. 52, page 51.

- (21) DER EINSATZ DEUTSCHER KAMPFWAGEN-VERBÄNDE IN OFFENSIVER ABWEHR AN DER WESTFRONT, OKTOBER 1918. [The employment of German tank units on the Western Front in October 1918.] (IV)

The final chapter deals with the lessons learned from the employment of tanks.

- (22) EISENBAHN-PANZERZÜGE. [Armored railroad trains.] (II)

In the final chapter the author discusses the organization of an armored train; the supply of munitions; observation and armor; material, and training of the crew.

December 1933

- (23) WEITERE FORTSCHRITTE DER HEERESMOTORIZIERUNG IM FREMDEN HEEREN. [Latest developments of motorization in foreign armies.]

MARINE CORPS GAZETTE

May 1934

- (1) NAVAL AVIATION'S ROLE IN FULLFILMENT OF NAVAL POLICY. First Lieutenant Lemly

- (2) ADVANTAGES OF COMBINING THE SECOND AND THIRD STAFF SECTIONS OF SUBORDINATE UNITS. Major Schmidt

- (3) ANTI-AIRCRAFT PROBLEMS AND SOLUTION. First Lieutenant Harris

- (4) PERSONNEL AND PAY

- (5) THE FAIRCHILD CAMERA MACHINE GUN

- (6) FOREIGN AFFAIRS. Healy

- (7) STREET FIGHTING. Major Young

- (8) TREATISE ON RIOT DUTY. Major Howard

- (9) WING SHOOTING AND GROUND STRAFERS. Second Lieutenant Johnson

- (10) JUNGLE WARFARE WEAPONS. Second Lieutenant Curry

MILITÄRWISSENSCHAFTLICHE MITTEILUNGEN (Austria)

By CAPTAIN F. DURING, INFANTRY

January 1933

- (1) DIE ÖSTERREICHISCH-UNGARISCHE HEERESKAVALLERIE BEIM NORDOST-

AUFMARSCH UND KRIEGSBEGINN
1914. [The Austro-Hungarian Army Cavalry at the beginning of the War.] Colonel v.Dragoni

Certain failures of the Austro-Hungarian cavalry, as also of the German cavalry, the author attributes to the impossibility of improving the staffs of higher commands. When in the field commands are formed from various sources for a specific purpose, usually one of two things happens: Either the senior commander is given command of the whole, and has to carry on with his original staff attempting a dual role, e.g., running a corps and a division at the same time; or, the gathering together of the formations under one command is omitted entirely—and this has always had the worst results.

In the first case, delegation is sometimes attempted, but this is no remedy, since it only passes the trouble on to the headquarters of a lower command. Congestion will be worse with the smaller staff, and the troops will have to suffer the more.

Of the second case, Colonel v.Dragoni gives as a classic example the battle of the Marne, when the circumstances of command in the gap between the German First and Second Armies led to the German retirement, and perhaps decided the whole war. He looks upon the German forces in this gap, two cavalry corps, six rifle battalions, and finally an infantry battalion, with six batteries, as having been frittered away. No attempt was made to unite these, as might have been done under General von der Marwitz, or what would have been better still, to put in for that purpose a complete corps staff which the Second Army happened to have available, viz., the Headquarters of the VII Corps, under General von Einem. The latter is the view of the German Official History. The author's opinion is that four cavalry divisions, one infantry division, and nearly 90 guns, wielded by one man, would never have allowed the enemy, feeling their way carefully over the Marne on 9 September, to cross that river. The moral would appear to be that if detachments have to be

taken under the stress of circumstances from various sources, G.H.Q. must have in reserve, and be able to produce at a moment's notice, a staff to command them, complete with signal and all other headquarter troops.

As regards failures of army cavalry due to other causes, Colonel v.Dragoni repudiates General Groener's judgement, in his excellent *Count Schlieffen's Testament*, that the German cavalry did not find the leaders capable of handling them in wide movements against the enemy's rear. He says that Germans and Austrians alike had leaders of the right type who could have done what was required of them, if only their cavalry had been equipped for such undertakings.

- (2) AUS DEN TAGEN VON LUCK IM SPÄTERBST 1916. ERLEBNISSE EINES BRIGADEKOMMANDOS. [From the days of Luck in the late spring 1916. Personal experiences of a brigade commander.] Major General Steinitz

A descriptive picture of the impressions, cares, etc., of a brigade commander of an Austrian infantry brigade during May and June 1916 on the Eastern Front.

- (3) AUSTRALIEN UND DIE WELTMÄCHTE. [Australia and the world powers.] General Weisinger

February 1934

- (4) WALLENSTEIN. [Wallenstein.] Mell
(5) ZUM ANGRIFFSPLAN DER ÖST.-UNG.
11. ARMEE IM MAI 1916 AUS SÜDTIROL. [The plan of attack of the Austro-Hungarian Eleventh Army in May 1916 in South Tyrol.] General v.Horsetsky

- (6) ANBAHNUNG EINES ZUSAMMENWIRKENS DER WAFFEN DURCH AUSBILDUNG AN DER OFFIZIERSAKADEMIE (INFANTERIE UND ARTILLERIE). [Co-operation between artillery and infantry by training at the Cadet Academy.] Major General Kainz

- (7) PS. [Horse-power.] Major v.Kirchbach, Retired

The author discusses the mechanical versus the physical horse-power and concludes that the first does not take the place of the second, but that the mechanical increases the physical horse-power. We need both motors and horses.

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- (8) DAS THOMPSON-SUBMASCHINENGEWEHR. [The Thompson Submachine rifle.] Major Wettendorfer

March 1934

- (9) DER FELDHERR RADETZKY. [Field Marshal Radetzky.] Colonel Wolf Schneider von Arno

The entire number of this magazine is dedicated to Field Marshal Joseph Radetzky, who was born in 1766 of an old and noble family, originally Hungarian. He joined the army as cadet in 1785 and became an officer in 1786. In 1795 he fought on the Rhine and in 1796 with Beaulieu against Napoleon in Italy. Promoted a major, he took part in Wurmser's Mantua campaign, and as Lieutenant Colonel and Colonel he displayed bravery and skill at Trebbia and Novi (1799) and at Marengo was hit by five bullets. In 1801 Radetzky was knighted in the Maria Theresa order and in 1805 became a Major General. From 1809 to 1812, as chief of the Austrian General Staff, he was active in the reorganization of the Austrian Army and its tactical system. As tactician he won great praise at Brienne and Arcis sur Aube. He entered Paris with the allied sovereigns in March 1814 and returned with them to the Congress of Vienna.

In 1836 Radetzky became a Field Marshal. In the War of 1848 he conducted his famous operation in the Quadrilateral, leading up to the triumph of Novara on 23 March 1849. The soldiers of his army idolized him and called him "Father Radetzky." He died 5 January 1858, greatly mourned by all whom he had commanded.

MILITAR-WOCHENBLATT (Germany)

By CAPTAIN F. DURING, INFANTRY

11 March 1934

- (1) KRIEGSERLEBNISSE—KRIEGSFAHRUNGEN—KRIEGSLEHREN. [Leadership.] General v.Kuhl

War experiences impress themselves very forcefully upon each man who saw service at the front, and if one has been at the front several times one becomes convinced that there is a treasure of experience. True, the experiences of an individ-

ual are a treasure for himself, but it becomes dangerous if from the experience of a single individual we draw lessons to form the basis of consequent instruction: Instructions should be based on the lessons learned from the experiences of many individuals.

v.Schlieffen was Chief of Staff of the German Army and his sound teachings were followed by such great leaders as Hindenburg and Ludendorff. The younger Moltke followed Schlieffen's teachings when he issued orders during the night 27-28 August 1914 to the German Third Army to march in a southwesterly direction, halfway between the German Second and Fourth Armies. This was sound, as the Third Army would have marched into the gap between the French Fourth and Fifth Armies and consequently would have threatened the flanks of the two French Armies. Unfortunately, v.Moltke changed his mind and consented to have the Third Army march to the southeast, permitting both French Armies to escape disaster.

We must consider it a national calamity that General v.Falkenhayn acted directly contrary to Schlieffen's teachings. Schlieffen taught the strategy of destruction, while v.Falkenhayn believed in limited objective attacks. Schlieffen believed victory could only be won in a war of movement, while v.Falkenhayn stated, among other things in his letter of 16 November 1914 to von der Goltz, that "we must hold what we have and not give up even one foot of terrain. I shall act according to this and shall never give up a foot of terrain without a fight."

This "basic principle" resulted in loss of movement and placed the German flank in a precarious position; the French made necessary preparation to envelop this right flank. Schlieffen had taught that it would be best to quickly withdraw from such a situation and to take up battle under more favorable conditions. Hindenburg acted accordingly when he withdrew at the time of a threatening envelopment from Warsaw, and by doing so, gained the initiative for a new offensive. The Allies showed a

greater freedom of maneuver than did the German Army under v.Falkenhayn. The French Fifth Army withdrew in time at St. Quentin, from a threatened German envelopment, as did the British Army at Mons and Le Cateau. Even the Russians exercised freedom of maneuver at Lodz, in the winter battles of the Masurian Lakes and at the battle of Vilna.

In future wars the basic principle to obtain a victory by a war of movement will hold good. An army which voluntarily gives up its freedom of maneuver and awaits the enemy in a prepared position is like a person who is under ether on the operating table. The surgeon can use the knife wherever he sees fit. The only difference is that the surgeon desires to save the patient, while the enemy desires the destruction of the army in position. The interest which all nations place in motorization proves that they all acknowledge the principle of movement. But movement must come down from the highest commander and the rapidity with which troops move is the *ultima ratio* of the highest commander. This will be especially true of the battlefields of Eastern and Southern Europe, where the mass will consist of foot troops and animal-drawn vehicles. It is the determination of the great leaders which leads armies to victory. Why was it possible that the army of Frederick the Great in 1756 was victorious on 5 November at Rossback and on 5 December at Leuthen? What made Blücher's Army arrive in time at Waterloo? While full credit is due to the troops for their march performances, nevertheless it was the determination of the high command which made this possible. Napoleon characterized his leadership by saying, "on s'engage et on voit." He was firmly convinced that he could determine the place where the decision was to be fought much faster than could the leader of the opposing forces.

v.Falkenhayn acted differently. After the German Army had settled down to a war of stabilization on the Western Front, he decided on operations which, according to Schlie-

fen, should have lead to a decision in the east. Twelve German Corps were to advance from the direction: Posen—Thorn against the flank and rear of the Russian forces, and to roll them up from the north. On 4 November he was notified that the German Ninth Army had planned a similar operation but with smaller forces, and of course, a different objective. v.Falkenhayn was forced to make a quick decision, but he failed to do this. When the Ninth Army began its operation on 11 November, he was still undecided. The result of this indecision was that the planned operation never materialized. The words of Schlieffen, that it is wrong to drive back part of the enemy here and there, but that one opponent must be destroyed first before the other can be successfully dealt with, was ignored by Falkenhayn. The deviation from Schlieffen's basic principle had a great influence on the final outcome of the war, but it is too late to correct that now, but Schlieffen's teachings have stood the test and should be taught now. The destruction (without loss of blood) of three French armies by surrender and entrance into neutral territory in 1870-71, influenced greatly the outcome of that war. Similarly in 1866 at Königgratz, the entire opposing forces were made ineffective practically without loss of blood. This shows that Schlieffen's strategy of destruction was not really what the term implied, but truly a most humane strategy. Even the politician can subscribe to such a strategy and this is especially important, as the wars of today are fought by the masses.

At the end of this article appears the following note by General von Kuhl:

"We can't say that v.Falkenhayn acted contrary to Schlieffen's principles from the beginning. v.Falkenhayn planned to withdraw the right flank of the German Army, in order to obtain room and time for the Sixth Army at Maubeuge for an offensive and thereby gain freedom of movement. It is regrettable that he listened to his staff, who objected to this plan. In the battle of the Yser and at Ypres he fought a

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determined battle for a decision. He carried the thought to fight for a decision on the Western Front as late as 1915. It is unfortunate that he could not decide to send strong forces to the Eastern Front; he acted in a half-hearted manner there. Finally, v.Falkenhayn believed that an early decision could not be obtained and that a constant hammering might tire the enemy and force him to ask for peace.

"General v.Falkenhayn denied that it was his decision which brought about a war of stabilization. It is true, however, that he always held on to the principle, never to relinquish a foot of terrain.

"The failures of v.Falkenhayn's regime are known. The author of the foregoing article is right in upholding Schlieffen's basic principles. The statement of v.Clauseswitz, 'War is an act of force in order to have the enemy do our will and there is no set rule how to use this force,' is still applicable."

(2) FRANKREICH LEHNT AB. [France refuses to disarm.]

(3) DIE SPANNUNG IM FERNEN OSTEN. [Strained relations in the Far East.]

(4) OPERATIVE ERDAUFLÄRUNG IM ZUKUNFTSKRIEGE. [Strategic reconnaissance in the next war.] Captain Röttiger

The author does not believe that a mechanized division should be part of a cavalry corps. Horses and motors can not function together on reconnaissance missions. According to the author it should be either horse or motor. This article is a reply to an article of the same name by Lieut.-Colonel v.Faber du Faur. (See RML No. 53, page 24.)

(5) BEKÄMPFUNG TIEF FLIEGENDER FLUGZEUGE. [Defense against low-flying airplanes.]

(6) DER TÜRKISCHE FÜNFJAHRESPLAN. [The Five-Year Plan of Turkey.]

18 March 1934

(7) IST DER CÄNNA-GEDANKE NOCH ZEITGEMÄSZ? [A reply to "Can We Still Have a Cannae?"]

How can one accomplish the destruction of an enemy without having a large superiority? By an attack against the flanks and rear of an enemy? The World War has taught us lessons which force us to admit that in the execution of a

planned envelopment, the direction of attack, as taught by Schlieffen, can not be followed.

The "German Field Service Regulations" state that an envelopment in conjunction with a secondary attack against the enemy front is surest of success. v.Schlieffen considered it absolutely essential to deliver a strong frontal attack and pin the enemy down, thereby permitting an envelopment against a weak flank. But today even weaker forces can not be contained if they do not want to be contained; and if we have only a small superiority of numbers, it will be impossible to pin the enemy down.

The increase in firepower through automatic weapons, in a defense in depth, permits the defense to employ only few troops. Strategic and tactical reserves are more free to move to any threatened point.

This new system of defense makes the success of an envelopment more doubtful. Even much weaker forces on a threatened flank are capable of holding out for a long time. Enemy air observation and reconnaissance by mechanized units will detect a planned envelopment early. Motorization makes it possible to bring strong forces to the threatened flank, using rapidly organized air units, mechanized forces or foot troops in trucks. The enemy is able to parry an envelopment, unless he decides to use the mass of his troops in a frontal attack.

But there is a counter-measure for an envelopment. "To envelop the envelopment." The flank attack of the French Sixth Army in the battle of the Marne; the counter-attack of the Russians at Lodz, are examples of this and which completely upset the German envelopment.

Opponents of the Schlieffen principle of envelopment say that it is a thing of the past. They are entirely wrong. The straight frontal attack will meet with more difficulties than will the envelopment. Unless we are greatly superior in numbers, it will be impossible to pin the enemy down along the entire front, and the enemy can easily bring strong forces to the decisive point of attack, preventing a break-

through, which, after all, is only successful if we can exploit it and roll up the enemy's flank. Therefore, the higher command will, in the future as in the past, plan to envelop the enemy and not attack him frontally. How can this be done successfully? If we are equal in strength or very slightly superior, it is better not to try to contain the enemy's front. Hindenburg recommended to Falkenhayn in 1915 to use all available strength for the envelopment of the Russian north flank, and to contain the Russian front with only few troops. Falkenhayn disapproved of this. Today, the strong frontal attack, which at Cannae was necessary for the success of an envelopment, is useless.

Due to the fact that fronts are now held by comparatively few troops, the force which is to make the envelopment should be very much stronger than the one which is to contain the enemy frontally. The available strength will determine whether an envelopment of both flanks should be made. In making plans for an envelopment, additional plans to meet a possible envelopment of our contemplated envelopment must also be made. A defense for such a counter-envelopment would be to have on the extreme flank of the envelopment, strong forces echeloned in depth. In other words, the envelopment flank must be made strong and echeloned in depth.

Surprise is very essential in an envelopment. This surprise is not to be hoped for, but must be assured. The advance to and the development for the envelopment must be made at night. Fake marches must be executed to deceive the enemy. Feint attacks must be made to attract the enemy's attention to the place of such attacks. Troops can be quickly withdrawn from such attacks and transported by trucks to the place of envelopment. Motorized artillery, mechanized units, and attack aviation must be rapidly changed to the main effort of the envelopment.

It is very important not to believe that an envelopment is the only thing to do in all situations. Whether

we plan a breakthrough attack or an envelopment depends entirely on the terrain and situation in each case. The enemy must never be given an opportunity to prepare for a certain operation, but must be kept in doubt of what to expect.

(8) NEUZEITLICHE INFANERIE. EIN HINWEIS AUF DIE TEILWEISE NEUBEWAFFNUNG DER SCHWEIZERISCHEN ARMEE. [Modern infantry. With reference to the partial re-armament of the Swiss Army.]

(9) BOMBENFLUGZEUGANGRIFFE BEI TAGE. [Bombing attack by day.] Captain Thelen, Retired

An attack by aviation consists of three distinct phases: the flight to the target, the attack, and the return flight. The tactics of the aviation in all three phases is regulated by three factors: enemy anti-aircraft artillery, enemy pursuit aviation, and the weather. Two of the factors, enemy antiaircraft and enemy pursuit, are more or less unknown quantities, while the third factor, the weather, is constantly changing. Weather, being dependent on the season of the year, has always exercised an influence on wars; in fact, it so happened that it temporarily stopped wars. Weather exercises a particular influence on aviation.

A clear blue sky determines a different flight to the target than an overcast sky, or when it is foggy or rainy. In the first instance, planes must fly to great heights in order to lessen the effect of antiaircraft, and the formation must be strong enough to combat enemy aviation successfully. An overcast sky permits of weaker strength and to fly more independently. On rainy or foggy days, bombing may be entirely omitted or individual planes must be dispatched on missions. While the weather conditions may exercise a different influence on aviation in each one of the three phases (the target may become invisible on account of suddenly appearing fog); the other two factors are only to be reckoned with over enemy territory. The effect of antiaircraft, either artillery or smaller weapons, is today either over or underestimated. It is very possible that in the next war an underestimated

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antiaircraft defense securing a direct hit forces the offensive aviation to take up new formations. The effect of antiaircraft since the war has been increased considerably. During the war the effect was about 2% to 3%, while today it is about 10%. Antiaircraft exercises a strong moral influence on aviators, which becomes less with the duration of the war.

Antiaircraft forces the formation, first to fly at great heights; second to look for protection behind clouds, which, of course, makes it more difficult to find the target; third to spread out more; and fourth, to have individual planes within the formation change height and direction.

Pursuit planes work in close cooperation with antiaircraft. The antiaircraft artillery has the mission to force the formation to spread out, thereby preparing the way for an attack by enemy pursuit. This forces us to ask two questions:

(1) What is the fire effect of the bombing formation with that of the pursuit formation, assuming both to be of equal strength?

(2) What is the most advantageous position of each plane in order to obtain the most effective fire power?

The fire effect of a bombing squadron of nine planes is dependent on several factors, just as the effect of a rifle company is dependent on the capabilities of each rifleman.

(a) Gunnery factors:

- (1) Training of the gunner in obtaining effective machine-gun fire;
- (2) Experience in previous battles;
- (3) Cooperation with the pilot.

(b) Technical factors:

- (1) Rapidity of firing the gun;
- (2) Accuracy of the gun;
- (3) Position of the gun in regard to the propeller;
- (4) Areas which can be covered by fire;
- (5) Position of individual planes in regard to fire assistance and dead areas;
- (6) Possibility of centralized fire control.

While factors under (a) depend on each individual and on experience in war, factors under (b) can be highly developed during peace time.

We have two basic formations (aside from practice and review formation), viz., the open and closed formation. The first is used when in flight to the target, while the second is used when attacked by pursuit and when on low flights.

(10) DER BALKANPAKT. [The Balkan treaty.]

(11) DIE INTERNATIONALE AUTOMOBIL- UND MOTORRADAUSSTELLUNG BERLIN 1934. [The international automobile and motor exhibition in Berlin, 1934.]

25 March 1934

(12) GEGEN DIE UNBEGRÜNDETE WELTKRIEGSANGST. OSTASIATISCHE-PAZIFISCHE BILANZ 1933. [The unsupported fear of a new world war. East Asiatic-Pacific situation, 1933.] General v.Mierka, Retired

(13) ARTILLERIEVERWENDUNG BEIM ANGRIFF MIT NICHT ANGELEHNTEN FLÜGELN. [The employment of artillery in attack when a flank is exposed.] Major General Feeser, Retired

(14) DIE NEUE FRANZÖSISCHE VORSCHRIFT FÜR DIE S. MG. [The new French heavy machine-gun regulations.]

The fire of the heavy machine gun is divided into three classes, viz.: direct or open fire, hidden fire, and indirect fire.

The degree of fire is divided into slow, normal, fast, and rapid fire.

The fires are named: fire of destruction, barrage fire, fire of interdiction, and harassing fire. Fire of interdiction is to be used against defiles, road crossings, bridges, and other points of the terrain.

The missions of the machine gun in attack and defense are as follows: In the attack: Support of the infantry; protection of the infantry; for barrage in depth and width in order to prevent enemy entering the terrain over which infantry advances, and in exceptional cases, attachment of machine guns to rifle companies; harassing fire and fire of interdiction is to be used at night. In the defense: barrage fire, counter-preparation, interdiction, and har-

assing fire. The counter-preparation is for the purpose of breaking up the enemy attack and to cover such points which can not be reached by the artillery. One platoon within the battalion is assigned to execute antiaircraft missions.

- (15) LUFTFAHRT-RUNDSCHEIN. [Survey of aviation.] Lieutenant Feuchter, Retired

- (16) TAKTISCHE UND TECHNISCHE GE-SICHTSPUNKTE BEI GELÄNDEENTGIF-TUNGEN. [Tactical and technical views on gasses areas.] Major Kleeberg

The author discusses the tactical and technical means employed in neutralizing gassed areas, or in passing such areas with the minimum of loss.

- (17) FESTUNG UND GESCHÜTZ. [Fortresses and cannons.]

- (18) DER BALKAN VON HEUTE. II. ALBANIEN. [The Balkans of today: Albania.]

4 April 1934

- (19) UNSERE KAVALLERIE IM WELT-KRIEGE UND IN ZUKUNFT. [The German cavalry in the World War and in the future.] Lieut. General Fleck, Retired.

It is a well known fact that the German cavalry did not come up to expectation during the World War. According to the author this was the fault of the high command and not the fault of the cavalry itself. Had the cavalry been used as Schlieffen intended it should be used, a different story would be told.

For the future the author suggests cavalry divisions of three brigades; each brigade to consist of three regiments of cavalry, one battery of horse artillery, and one platoon of machine guns. The divisional troops to consist of one Jäger regiment of three battalions (motorized), one battalion of howitzers (105-mm.), one battalion of engineers with bridge train, communications personnel, and aviation. Frederick the Great divided his cavalry into battle cavalry and reconnaissance cavalry. He considered the reconnaissance cavalry of such importance that he increased the nine squadrons to one hundred squadrons.

We need battle cavalry today to work in cooperation with the mechanized and motorized troops. This

cavalry should never be used for reconnaissance purposes, but a cavalry separate from the above should be trained and used for reconnaissance alone.

- (20) DIE NEUE AUSBILDUNGSVOR-SCHRIFT FÜR DIE ARTILLERIE. [The new artillery training regulations.] Lieut.-General Marx, Retired

- (21) SCHIESSEN UND BEOBSACHTEN AUS DEM FLUGZEUG. [Firing and observing from an aeroplane.]

- (22) DIE BEDEUTUNG DES KAMPF-WAGENPROBLEMS IN FRANKREICH. [The importance of the problem of tanks in France.] General v.Taysen, Retired

The author discusses briefly French military literature, which, for several years, has tried to show the advantages and possibilities of a rapid and decisive beginning of a war and the enormous development of motorized and mechanized means for battle and transport.

- (23) TECHNISCHER RUNDBLICK. [Technical survey.] Colonel Blümner, Retired

- (24) DER VERLUST AN TRUPPENFÜH-RERN 1915. [The loss of troop officers in 1915.]

- (25) DIE KRIEGSSCHULD RUSZLANDS. [The war debt of Russia.] v.Wegerer

- (26) UBER DIENSTGRADE DER SANI-TÄTSOFFIZIERE. [The rank of medical officers.]

11 April 1934

- (27) DIE MECHANISIERUNG DER ENGLISCHEN ARMEE. [The mechanization of the British Army.] Major Braun

The following sentence appears in a recently published "British Training Regulations" "Without the full utilization of armor and motor there will be no war of movement in the future."

England now has four new types of motorized armored vehicles: (1) The medium tank, Vickers, 16-ton, 180 horsepower with a speed of about 23 miles per hour; (2) the light tank, Mark II, Vickers, 3-ton, 60 horsepower with a speed of about 30 miles per hour on roads and 23 miles per hour over terrain; (3) the armored car with a speed of about 38 miles per hour; (4) the tractor, which is to be used mainly in pulling heavy infantry weapons.

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The mixed armored brigade consists of a command tank, one reconnaissance platoon, one antiaircraft platoon and three battalions of mixed, and one battalion of light tanks. The mixed battalion consists of one command tank, one platoon accompanying weapons, three companies of tanks (each company has one platoon of light and one platoon of medium tanks). The total number of tanks within a mixed battalion is twenty-five medium and twenty-two light tanks.

The light tank battalion has fifty-three light tanks and five medium tanks. The basic principles for the employment of mechanized units in England are:

(1) The mechanization of the army is absolutely necessary, if a war of movement is desired.

(2) In addition to the motorized units, we must have mechanized units, which will take the place of the old cavalry corps.

(3) Besides the mechanized cavalry corps we must have tank battalions which work in close cooperation with the infantry and artillery. In case the infantry attack is held up by wire and enemy machine guns, the armored vehicle becomes the weapon which takes the obstacles, etc., without trouble and gives the attack new life.

(28) DIE ENTWICKLUNG DER LUFTFAHRTTECHNIK 1933. [The development of aviation in 1933.] Captain Ritter, Retired

(29) DIE NOTWENDIGKEIT EINER NEUEN INFANTERIEPATRON. [The necessity for a new infantry cartridge.]

(30) ZUKUNFTSENTWICKLUNG DES PANZERZUGES. [Developments of armored trains.]

The author recommends that armored trains be so constructed that they can be used on rails and over terrain.

(31) KAVALLERIEATTACKE ZU PFERDE GEGEN SIEGREICHE INFANERIE 1915. [Mounted cavalry attacks against infantry in 1915.]

(32) DIE CHEMISCHE INDUSTRIE IN DER SOWJETUNION. [The chemical industry in Soviet Russia.]

18 April 1934

(33) FRANKREICH'S "FREIWILLIGE ABRÜSTUNG." ["Voluntary disarmament" of France.]

(34) RÜSTUNGSAUSGABEN. [Budgets for defense.]

The British budget and the budget of Yugoslavia.

(35) ERHALTUNG DER KAMPFKRAFT IM GEFECHT. [Maintenance of effective strength in battle.]

(36) VON DER JAPANISCHEN ARMEE. MOTORISIERUNG UND MECHANISIERUNG. [The Japanese Army. Motorization and mechanization.]

According to information from Russia ("Vojenské Rozhledy," 1934, Vol. 1), Japan has begun the construction of armored motor vehicles, which are especially adapted for use in an East Asiatic theater of operation. The Japanese plan to have within each infantry division one mechanized regiment of infantry. The organization of this unit is as follows:

One company light tanks (Carden-Loyd VI)
One motorcycle company with machine guns
One company light and heavy armored cars
Two companies of infantry in trucks
One motorized battery of artillery
One motorized communication platoon.

This regiment will be used (increased by horse cavalry) on reconnaissance, envelopments, withdrawals, and pursuit.

The organic antiaircraft and anti-tank defense of the infantry division will be strengthened by 13-cm. and 20-cm. heavy machine guns (and 37-mm. guns). Motorization of engineers, bridge trains, and the services of supply have begun.

The divisional artillery remains horse-drawn.

The armored car troop of the cavalry brigade will be increased to a squadron of two troops with eight to ten armored motorcycles (carrying 13-mm. machine guns) and a platoon of special machine guns for antiaircraft defense. Each troop has ten armored cars and ten motorcycles. The artillery of the cavalry brigades will be motorized in few brigades. In several brigades the supply trains will be completely motorized, in others, only partly so.

The munition trains of the artillery are to be changed to motorized armored munitions trucks or light tanks; they are now being constructed.

The operation in China has proven that Japan has an insufficient number of tanks. Recently Japan has purchased the French 68-ton tank, "2-C," the floating-tank "Christ," and the improved Vickers tank.

At present the organization of new tank companies to increase the present regimental strength and the organization of two new regiments has begun.

Japan has ten armored trains.

Japan intends to organize mechanized mixed "fast" brigades and mechanized "shock" brigades.

The mixed "fast" brigade will consist of:

- Two battalions armored cars
- One battalion light tanks
- One battalion motorized infantry
- One battalion motorized artillery
- One battalion light field artillery and motorized supply trains.

The "shock" brigade will consist of three to four battalions tanks, part light, part heavy, and one battalion artillery; the complete organization of this brigade is still under consideration.

The Air Service consists of eleven regiments, three of which are being organized. With the exception of two, all regiments are mixed units and have bombing, observation, and pursuit squadrons. One regiment consists of pursuit and another of bombing planes. All regiments have two battalions at present, but it is expected that they will be increased to three battalions after reorganization. The regiments of two battalions consist of 100 officers, 330 noncommissioned officers, and 900 privates, and 60 to 80 planes.

The following planes are being used:

PURSUIT: Nakadsima-91, monoplane, Motor Jupiter VI and VII, 450 horsepower; ground speed about 160 miles per hour; ceiling 39,200 feet; capable of rising 20,000 feet in 8.7 minutes. Operating range, 9½ hours. 2 Vickers machine guns.

Kawasaki-92, biplane, Motor B.M.W.-VI, 600 horse-power; ground speed about 200 miles per hour; ceiling about 40,000 feet; capable of rising 20,000 feet in 8 to 9 minutes. Operating range, 2½ hours. 2 Vickers machine guns.

OBSERVATION PLANES: Kawasaki-88, 2-seater, biplane, Motor B.M.W.-VI, 600 horse-power, operating range, 5 to 6 hours; ground speed about 130 miles per hour; ceiling, 26,000 feet; four machine guns, two of which fire through the propeller.

Mitsubissi-92. Motor of the same name, 400 to 420 horse-power, 2-seater; ground speed 130 miles per hour. Operating range, 5 hours; ceiling, 24,000 to 28,000 feet; four machine guns, two of which fire through the propeller.

BOMBERS: LIGHT: Kawasaki-88, Motor B.M.W.-VI, 600 horse-power; ground speed 130 miles per hour. Operating range, 5 to 6 hours; ceiling, 28,000 feet; four machine guns; carrying capacity between 1,000 to 1,200 pounds bombs.

MEDIUM: Kawasaki-87. 2 Motor B.M.W.-VI, each 600 horse-power; ground speed, 110 miles per hour. Operating range, 6 hours; ceiling, 20,000 feet; five men, five machine guns; carrying capacity 2,000 pounds bombs.

HEAVY NIGHT BOMBER: Junkers 5-38. 4 motors Rolls-Royce, each 800 horse-power; ground speed 130 miles per hour. Operating range, 10 hours; ceiling, 12,400 feet; seven machine guns, one cannon; carrying capacity 5,000 pounds bombs. Bombs weigh from 50 to 100 pounds; against live targets bombs of 5 pounds are used. Bombing attacks are made from a height of 8,000 feet, followed by an attack with machine guns and light bombs.

(37) DIE LUFTWAFFE IM ANGRIFF. [The Air Service at the beginning of a war.] Captain Crisoli

The author discusses, from a German point of view and for German consumption, an article by the French General Armengaud, "Air Service and defense against it."

(38) DIE GENERALSTABSKONFERENZ DER KLEINEN ENTENTE IN BUKAREST. [The conference of the Gen-

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eral Staff of the Little Entente in Bucharest.]

- (39) **FÜHRER UND FRONTSOLDAT.** [Leaders and soldiers at the front.]

A discussion of Major General Fuller's book, "Generalship," in which it is suggested that generals should be at the front leading their troops, instead of being in rear not knowing what is going on at the front.

25 April 1934

- (40) **NEUESTE KRIEGSERFAHRUNGEN. NACH GEFECHTSBERICHTEN AUS DEM CHACOKRIEG.** [Latest war experiences. Reports from the Chaco War.] (I)

This narrative is based on the personal experiences of a German officer who fought on the Bolivian side and commanded a platoon of tanks. This installment covers the battles at Nanawa on 4 July 1933 and at Pirijayo on 24 August 1933. (41) **DER ANNÄHERUNGSMARSCH. NEUE FRANZÖSISCHE ANSICHTEN.** [The development. French views.] Major Braun

An abstract of an article of the same title, which was published in the April and May 1933 issues of the *Revue Militaire Francaise* and digested in RML No. 51, page 151.

- (42) **ÜBER DEN "RÜCKWÄRTS GERICHTETEN OPTIMISMUS."** [Optimism which looks to the past.] Lieut.-General Marx, Retired

- (43) **ENGLAND AUF DEM WEGE ZU EINER NATIONALWEHR.** [England on the road to fascism.] Petersen

- (44) **FRANKREICH UND JAPAN. DOPPELTES SPIEL AM QUAI D'ORSAY?** [France and Japan. Double play at the Quai d'Orsay?] Dix

- (45) **DAS AUTOIRO IM SEEKRIEG.** [The autogiro in naval warfare.]

4 May 1934

- (46) **NEUES ÜBER DIE "LÜCKE IN DER MARNESCHLACHT."** [The gap in the Marne battle.] General v.Kuhl, Retired

This article, which is based on the book by Lieutenant Colonel Pugens, "Deux corps de cavalerie à la bataille de la Marne, 6-9 Septembre 1914," draws the conclusions that the two cavalry corps Marwitz and Richthofen, in spite of many errors in the execution of

their mission to delay the enemy, fulfilled this mission. The Allies were delayed and deceived; the entire British Army, the cavalry corps Conneau, and the left flank of the French Fifth Army were delayed for three days in reaching the Marne.

- (47) **NEUSTE KRIEGSERFAHRUNGEN. NACH GEFECHTSBERICHTEN AUS DEM CHACOKRIEG.** [Latest war experiences. Reports from the Chaco War.] (II)

This installment covers the fight at Alihuata, 7 December 1933.

- (48) **DIE GEFAHREN EINES MILIZHEERES.** [The danger of militia.]

- (49) **LUFTFAHRT-RUNDSCHEID.** [Survey of military aviation.] Lieutenant Feuchter, Retired

- (50) **ÜBER DIE AMERIKANISCHE WEHRMACHT. AUS DEM JAHRESBERICHT DES GENERALSTABSCHEFES DER VEREINIGTEN STAATEN.** [The American Army. From the annual report of the Chief of Staff.]

- (51) **DIE BEFESTIGUNG DER BELGISCHEN OSTGRENZE.** [The fortification of the Belgian eastern boundary.]

Belgium is following the footsteps of France in building a complete defensive system along its eastern boundary, in rear of which France is also building fortifications on its northern boundary, so that any threat to France which comes through Belgium will meet two complete sets of strong fortifications.

11 May 1934

- (52) **ARTILLERIE IM NACHHUTGEFECHT.** [Artillery in rear guard action.] Major General Feeser, Retired

The author describes the action of two battalions of the 4th Bavarian Field Artillery, which were part of a rear guard of the 2d Bavarian Division. The artillery by its fire alone and without any action of the infantry of the rear guard, delayed the enemy for 24 hours, thereby permitting the main body of the division to develop at the Saar.

- (53) **DIE VERTEIDIGUNG VON ERDZIELEN GEGEN LUFTANGRIFFE.** [The defense of ground targets against attacks from the air.] Captain Thelen, Retired

The author discusses first the defense of isolated targets (railroad

junctions, bridges, etc.); second, the defense of mass targets (industrial centers, towns, etc.); and third, the defense of areas.

- (54) DIE STÄBE UND IHRE "CHATEAUX." EINE ENTGEGNUUNG AN HERRN GENERAL FULLER. [The staffs and their "chateaus."] Lieut.-General Marx, Retired

The author discusses the book, "Generalship," by General Fuller, and states that the place of the higher commanders is not with the troops on the battlefield but somewhere in rear, and the headquarters should be in buildings suitable for staff work, such as "chateaux."

- (55) DER FRANZÖSISCHE WEHRMACHTSHAUSHALT. [The French budget for national defense.]

- (56) DIE FEDER MÄCHTIGER ALS DAS SCHWERT? [Is the pen mightier than the sword?]

- (57) DIE ARMEE VON MANDSCHUKUO. [The Army at Manchukuo.]

The army consists of eight brigades of infantry, seventeen mixed brigades, eleven cavalry brigades, eight to ten batteries of field and mountain pieces, no heavy artillery, no technical troops with the exception of two to three engineer battalions, a total of 115,000 to 120,000 men. Infantry brigades consist of two, three, or four regiments and mixed brigades of two regiments of infantry, one regiment of cavalry, or vice versa.

18 May 1933

- (58) AUFBAU VON STAAT UND ARMEE IN JUGOSLAVIEN. [Development of state and army in Yugoslavia.]

The peace-time army of Yugoslavia consists of five armies of three to four divisions. The division has one brigade of three to four regiments of infantry, one brigade of artillery of two regiments, one supply company. One "Garde division" of one regiment of infantry, two regiments of cavalry, one regiment of artillery of two battalions, one engineer company. The cavalry division consists of two brigades of two regiments of cavalry, one battalion artillery of three batteries, one battalion bicyclists, one platoon mounted engineers, and one communication squadron.

The artillery regiment has two battalions of two batteries, with

the exception of the artillery of the "Garde division" and cavalry division which have three batteries per battalion.

The heavy artillery consists of five regiments of two battalions of three batteries, having 105-mm., 150-mm., and 155-mm. guns.

In addition, Yugoslavia has one regiment fortress artillery and three regiments antiaircraft artillery. The organization of the air arm is not completed; at present it has about forty observation, pursuit, and bombing squadrons.

In training, special stress is laid on mountain warfare.

Yugoslavia can mobilize about three million men.

- (59) BEWAFFNUNG NEUZEITLICHER INFANTERIE. DARGESTELLT AN DER ENTWICKLUNG DER BELGISCHEN INFANTERIEBEWAFFNUNG. [Armament of modern infantry. The development of the armament of the Belgian infantry.]

The Mauser rifle, model 89, with which the Belgian infantry has been armed, has been replaced by a lighter rifle, model 30. The Browning machine gun, model 30, is the light type and the Maxim machine gun the heavy type, which the infantry carries. It is contemplated to equip the infantry with a 47-mm. cannon.

- (60) KAVALLERIE VON EINST UND JETZT. [Old and new cavalry.] General v.Poseck, Retired

The author, after a short discussion of the use of the cavalry in 1914, laments the fact that the brilliant achievements of the cavalry are not generally known. While the cavalry is not opposed to mechanization, the motor can never replace the horse. Both the motor and horse have their limitations; use both and the limitations can be overcome. The motor is faster on roads, but the horse is faster over rough country. At night the horse is far superior to the motor, and the author recommends that maneuvers be held, in which both mechanized cavalry and horse cavalry take part, but that the maneuvers not be called off each afternoon, as has been the practice, but to have the maneuver continue day and night.

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(61) NEUE VÖLKERRECHTLICHE ABKOMMEN ÜBER VERWUNDETEN-UND KRIEGSGEFANGENENBEHANDLUNG. [New international laws pertaining to treatment of prisoners of war and wounded prisoners.] Fonck.

(62) DAS UNRUHIGE ARABIEN. [The restless Arabia.]

(63) RUSZLANDS WEG NACH TANNENBERG 1914. [Russia's road to Tannenberg, 1914.] General Noskoff.

A review of the book, "Russlands Weg nach Tannenberg," by v.Kürenberg

25 May 1934

(64) HEER UND FLOTTE. [Army and Navy.] Lieut.-General Fleck, Retired

(65) VOM MISZVERSTÄNDENEN SCHLIEFFEN. [The misunderstood Schlieffen.] Lieut.-General Kabisch, Retired

The author discusses the Cannae articles previously published in the *Militär-Wochenblatt*. It is interesting to note that the author was present during the general staff rides in 1906, at which time Schlieffen made the following prophetic remarks: "In this situation the Blue leader considered it correct to send two corps of his right flank of the western armies to the east. In doing this, he lost that superiority which had enabled him to frustrate the attempts of the enemy to put up a strong resistance with its left flank. His advance began to slow down, etc. . ." The basic principles of Schlieffen's strategy will never grow old.

(66) FÜHRERNACHWUCHS IN DER ROTEN ARMEE. [Replacement of leaders in the Red Army.] Maurach

The Russians called the Red Army "The Red Workingmen and Farmer's Army," and in order that this is not a name but a fact, officers of the army must come from the proletariat. The school system at its best is very low in Russia and only a small percentage of the children of the lower classes finish the schools, which means that the sons of those classes have not the basic qualifications to absorb the instruction given in preparation for their commission as officers. The author concludes that the young Red commander would be an elite of class proletariat but not an elite of soldiers and leaders.

(67) AMERIKA UND DIE SOWJETUNION. [America and Russia.]

(68) GEHORSAM IST DER ANFANG ALLER WEISHEIT! [Obedience is the beginning of all wisdom.]

4 June 1934

(69) HEERESMOTORISIERUNG UND ERFAHRUNGEN MIT KAMPFWAGEN IN FRANKREICH. [Motorization of the French Army and experience with tanks.] Major Braun

After stating that France has 4,000 tanks of all types and builds 300 each year of the Renault type, the author discusses the maneuvers of 1932 and 1933. Based on the experience of maneuvers the French are planning:

(a) To motorize all staffs, trains, communication personnel, and some of the heavy guns.

(b) Full motorization of one-sixth of infantry regiments to form fast divisions, and one-half of the entire artillery.

(c) Reorganization of three-fourths of cavalry in mixed fast divisions.

(d) Organization of mechanized units as a weapon under control of the high command.

It is contemplated to complete this in 1935.

(70) AUFZÜLLEN EINER IN DER ANGRIFFSFRONT ENTSTANDENEN LÜCKE. [Filling of a gap which appeared during an attack.] Colonel v.Loebell, Retired

This is a discussion of the battle at Lubaszow in June 1915 in which the author was ordered to fill a gap which had occurred between two regiments during the attack. Colonel v.Loebell was at that time in command of a battalion, and he describes the advance to the gap and the system he employed to bring his battalion into line.

(71) AUFSTIEG UND NIEDERGANG DER WAFFEN. [Rise and fall of weapons.] Leppa

(72) AUFBAU UND AUSBILDUNG EINES RESERVEOFFIZIERKORPS. DIE RESERVEOFFIZIERE DER U.S.A. [Development and training of the Reserve Officers Corps of the United States Army.]

(73) DIE 2-CM-FLUGZEUGKANONE BECKER. [The 20-mm. cannon for airplanes.] Major General Klie, Retired

- (74) DIE BEDEUTUNG DER ENGLISCHEN LUFTMACHT. [The importance of the British air force.]

According to the author the demand for a powerful air force for England seems somewhat exaggerated to the British naval authorities. It is the Navy which must protect the import of food and raw material during a war, but it must be protected by an air force. Both forces are essential, and neither can replace the other.

- (75) GENERAL—FÜHRER—FRONTSOLDAT. [Generals, leaders, and soldiers at the front.] Möller-Witten

The author refers to Fuller's book on "Generalship" and states that the average German leader was at the front and cites many concrete cases to prove his point.

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July-August 1934

- (1) PACK ICE AND MOBILE DAMS. Lieut. Colonel Hall
- (2) STRATEGIC MINERAL SUPPLIES—2. MANGANESE. Major Roush
- (3) THE MIR ALUM DAM. Comstock
- (4) MECHANICAL HANDLING OF AIRSHIPS. Lieutenant Mackey
- (5) THE COMMAND AND GENERAL STAFF SCHOOL. Major Willoughby
- (6) FLOODS AND THEIR ECONOMIC IMPORTANCE. Captain Matthes
- (7) THE PASSING OF THE GUN TEAM. Major General Bishop
- (8) THE NEW PONTONS IN A RIVER CROSSING. Lieutenant Harding
- (9) COMBAT GAS DEFENSE. Captain Helwig
- (10) THE COMMON SENSE OF CAMOUFLAGE ATTACK. Major MacKenzie
- (11) ANENT TANKS. Major Dorst
- (12) THE CAMELLIZATION OF THE ARMY. Captain Caygill
- (13) PROBLEMS WITH THE WOODLAND ARMY. Captain X
- (14) AN INFANTRY COMBAT MAP. Lieut. Colonel Ward

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- (1) THE VALUE OF STUDIES IN HEALTH AND SANITATION IN WAR PLANNING. Lieut. Colonel Gibson
- (2) MARCH CASUALTIES DUE TO HEAT EXHAUSTION. SUGGESTED CAUSE AND TREATMENT. Major Brodkin

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- (3) OUT OF THE GRAND CANYON ON A LITTER: A SEQUEL. Major Williams
- (4) A NAVAL MEDICAL OFFICER ON DUTY WITH THE CIVILIAN CONSERVATION CORPS. Lieutenant Ball

NAVAL INSTITUTE PROCEEDINGS

June 1934

- (1) THE PROBLEM OF THE NAVAL TREATIES. (Honorable mention, 1934) Lieut. Commander Talbot
- (2) PROMOTION BY SELECTION. Admiral Sims
- (3) THE NAVY AND THE NATIONAL LIFE. Captain Knox
- (4) THE LAW IN FOG. Lieutenant Farwell
- (5) TEACHING LANDING OPERATIONS WITH MODELS. Lieut. Commander Richardson
- (6) OLD MAN RIVER, 1863. Lieut. Commander Dohrman
- (7) HISTORICAL BACKGROUND OF CHINA'S TROUBLES. Captain Dawes

July 1934

- (8) NATIONAL POLICIES AND DEFENSE. Lieutenant Akers
- (9) PHYSICAL PROWESS AND LEADERSHIP. Lieutenant Kennaday
- (10) VANISHED SHIPS. Lathrop
- (11) THE INFLUENCE OF PUBLIC OPINION UPON WAR. Lieutenant Anderson
- (12) A NEW FORMULA FOR AZIMUTH. Collins

PIONIERE (Germany)

BY CAPTAIN F. DURING, INFANTRY

February 1934

- (1) PIONIERE UND INFANERIE IM BEWEGUNGSKRIEG. [Engineers and infantry in a war of movement.]
- (2) AUSBILDEN DER PIONIERKOMPANIEN. GRUNDSÄTZLICHES. [Training of an engineer company.]
- (3) PIONIERAUSBILDUNG ALLER WAFFEN. [Engineer training for all arms.]
- (4) AUFTRAG ODER BEFEHL? [Directive or order?] (5) LUFTSCHUTZ UND TARNUNG BEIM FLUSZÜBERGANG. [Antiaircraft defense and camouflage at river crossings.]
- (6) MOTORKRAFT AUF DEM WASSER. [Motor-power on water.]
- (7) LANDEN AN OFFENER KÜSTE. [Landing exercises.]

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- This article is reprinted from the *Militär-Wochenblatt*, 25 October 1933. (See RML No. 52, page 90.)
- (8) BEHELFSBRÜCKEN. [Temporary bridges.]
 - (9) DER UBERGANG ÜBER DIE SZCZARA. [The crossing of the Szczara in September 1915.]
 - (10) AUS EINEM KRIEGSTAGEBUCH. [From a war diary.]

A short review of the crossing of the Szczara in September 1915 by three German divisions.

- (10) AUS EINEM KRIEGSTAGEBUCH. [From a war diary.]

The war diary of an engineer battalion during the attack at Chauny in April 1918.

- (11) UBERSETZ- UND BRÜCKENGERÄTE FREMDER HEERE. [Bridging material of foreign armies.]
- (12) FRANZÖSISCHE ANSCHAUUNGEN. [French views on river crossings.]

This article is a translation of the article "Franchissement des Cours d'eau" (River crossings), by Lieutenant Thonnard, published in the May 1933 number of the *Bulletin Belge des Sciences Militaires*. (See RML No. 50, page 46.)

QUARTERMASTER REVIEW

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- (1) VANCOUVER BARRACKS
- (2) ZISKA'S CAMPAIGNS. Lieutenant Goguen
- (3) CHILE'S LAND OF LAKES. Harris
- (4) NEW MOTOR LIFE BOATS FOR THE ARMY. Captain Holt

REVISTA DEL EJERCITO Y DE LA MARINA (Mexico)

BY FIRST LIEUTENANT M.D. TAYLOR, F.A.

February 1934

- (1) PRINCIPIOS DE DOCTRINA PARA LA ORGANIZACIÓN DEL EJÉRCITO DE MÉXICO. [Doctrinal principles for the organization of the Mexican Army.] General Calles
- (2) ORIGEN, ACTUACIÓN Y FINALIDADES DE LA ESCUELA SUPERIOR DE GUERRA. [Origin, operation and purpose of the Staff College.] Captain Beristain
- (3) ESPÍRITU MODERNO DE NUESTRA EDUCACIÓN MILITAR. [The modern spirit of our military education.]
- (4) FUNCIÓN EDUCATIVA DEL EJÉRCITO. [The educational function of our army.] Colonel Catalán
- (5) LAS NUEVAS ORIENTACIONES DEL EJÉRCITO. [A new orientation for the army.]

- (6) NUESTRA DOCTRINA DE GUERRA. [Our doctrine of war.] Lieut.-Colonel Alamillo Flores

Mexican war plans should be based on the assumptions of numerical and material inferiority in the face of an invading enemy. Consequently, the armed forces must renounce the united offensive and assume an active defense until the plans of the enemy develop and an opportunity arises to take the counteroffensive. Studies at the Staff College should be directed toward a determination of the probable routes of enemy invasion, bearing in mind that Mexico City will be his ultimate objective. In meeting such an enemy the factor, mobility, should be the one most favorable to the Mexican forces. Mobility, then, should be the goal of peace-time organization and training.

- (7) LA CULTURA MILITAR DE MÉXICO. [General culture in military education.] Captain Posadas

- (8) EL EJÉRCITO, PRINCIPIOS GENERALES EN LOS QUE DESCANSAN SU ORGANIZACIÓN. [General principles underlying the organization of the army.] Major Arizmendi

- (9) LA REVOLUCIÓN MEXICANA. [The Mexican Revolution.] Captain Salin

- (10) NUEVA ORIENTACIÓN EN LA POLÍTICA EXTERIOR DE MÉXICO. [Our orientation in Mexican foreign policy.] Lera

- (11) LA ESCUELA MILITAR DE APLICACIÓN. [The Special Service School.] Lieut.-Colonel Mercado

- (12) EN QUÉ CONSISTE EL CURSO DE TÁCTICA GENERAL EN LA ESCUELA MILITAR DE APLICACIÓN. [The substance of the course in general tactics at the Special Service School.] Major Pedraza

- (13) ÚTILES DE GUERRA MODERNOS. [Modern weapons.] Brigadier General Azcárate

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- (14) PLAN DE ENSEÑANZA DEL LA ESCUELA SUPERIOR DE GUERRA. [Organization of instruction at the General Staff School.]
- (15) EL SABRE. [The saber.] Captain Calderón
- (16) ORGANIZACIÓN ADMINISTRATIVA DE LOS CUERPOS DE TROPA DEL EJÉRCITO FRANCÉS. [Administrative or-

- ganization of units of the French Army.] Colonel Manjarrez
(17) LA FORTIFICACIÓN ENTRE LOS ROMANOS. [Field fortifications among the Romans.] Major Alvarez
(18) EL ARMA DE INGENIEROS. [The corps of engineers.] Captain Pámanes E.
(19) MÉTODO PARA EL ESTUDIO DE ESTRATEGIA Y TÁCTICA NAVAL. [Method of study for naval tactics and strategy.] Lieut.-Colonel Aznar
(20) BREVES CONSIDERACIONES ACERCA DE NUESTRA PREPARACIÓN MILITAR. [A few observations regarding our military preparedness.] Captain Vinalas Carsi
(21) CUÁL ES LA VALIDEZ DE LA TESIS DOUHETIANA Y EN GENERAL DEL SABER QUE TIENE POR FINALIDAD LA ASCERTADA CONDUCCIÓN DE LA GUERRA? [What is the validity of the Douhet doctrine and in general that of any knowledge directed at predicting the future form and conduct of war?] Captain Corzo y Molina
(22) DOCTRINA. [Military doctrine.] Captain Fuller
(23) LA ORGANIZACIÓN DE NUESTRA MARINA ORIGINAL. [The organization of our first navy.] Lieutenant López de Nava
(24) DERECHO INTERNACIONAL MARITIMO. [International maritime law.] Captain Trujillo Montano
(25) LAS RELACIONES ENTRE LA ECONOMÍA Y EL PODER ARMADO. [The industrial basis of military power.] Schlesinger
(26) TRABAJOS DE FOTOGRAFÍA AÉREA. [Aerial photography.] Lieutenant Salazar Diaz
(27) ORGANIZACIÓN DE LOS PRINCIPALES EJÉRCITO DEL MUNDO. [Organization of the Spanish Army.]

REVUE DE L'ARMEE DE L'AIR
(France) (Formerly, "Revue des Forces Aériennes")

BY FIRST LIEUTENANT M.D. TAYLOR, F.A.

January 1934

- (1) LA LUTTE DE L'AVIATION BRITANNIQUE CONTRE LES ZEPPELINS DE 1914 À 1918. [The war of British aviation on the Zeppelins from 1914 to 1918.] Lieutenant Barjot

The author traces the development of the Zeppelin defense of the British aviation and attributes its

final success to two causes: (1) the explosive Pomeroy bullet which first appeared in 1916, and (2) the extensive use of hydroplanes and pursuit airplanes carried aboard ship. He concludes that the effectiveness of the Pomeroy bullet has been greatly reduced since the war by the use of helium as the lifting gas of dirigibles. Nevertheless, he sees little of military value in the dirigible which remains highly vulnerable to pursuit aviation and to the forces of nature which destroyed the Dixmude, the R 101, the Akron, and twenty-two German Zeppelins during the war.

- (2) DE PARIS À NOUMÉA. [The Paris—Nouméa flight.] Captain Dévé
(3) CANON OU BOMBE AÉRIENNE. [Is the cannon or the airplane bomb the principal weapon of a fleet?] (4) A PROPOS DE L'AVIATION BRITANNIQUE DE COOPÉRATION. [Concerning English aviation of direct support.]
(5) A PROPOS DU TIR AU FUSIL CONTRE AVIONS VOLANT À FAIBLE ALTITUDE. [Concerning the effects of rifle fire against attack aviation.]
Colonel Mecozi in the *Revista Militare Italiano* of October 1933 reaches conclusions much less favorable to ground troops than does Col. Garrone (see *Revue des Forces Aériennes* of December 1933) in a similar study. The former examines the case of a battalion attacked by three airplanes using machine guns and bombs. After considering the factors of time, volume of fire and dispersion, he evaluates at .16 the probability of hitting any individual soldier and at .0017 the probability of hitting an individual airplane.
(6) L'EMPLOI DES FORCES AÉRIENNES AVEC L'ARMÉE EN CAMPAGNE. [The British regulations for the use of aviation in conjunction with the field forces.]
(7) NOUVELLE RÉPARTITION DE L'AVIATION BRITANNIQUE DE BOMBARDEMENT. [New disposition of British bombardment aviation.]
(8) AVIATION CHINOISE. [Chinese aviation.]
(9) QUELQUES INFORMATIONS SUR L'AVIATION MILITAIRE SOVIÉTIQUE. [Some data on Soviet military aviation.]

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- (10) QUELQUES AVIONS ALLEMANDS DE LA GUERRE. [Description of several German military airplanes.]
- (11) LES ARMES AUTOMATIQUES MADSEN. [The Madsen automatic arms.]
- (12) LES PORTE-AVIONS AMÉRICAINS. [The American airplane carriers.]
- (13) AVIONS AMÉRIQUEAINS. [American airplanes—the Boeing P 26 and the Corsair 80.]
- (14) LES DEUX PRINCIPAUX AVIONS DE L'AVIATION NAVIDE BRITANNIQUE: LE HAWKER "NIMROD" ET LE HAWKER "OSPREY." [The two principal airplanes of British naval aviation, the Hawker "Nimrod" and the Hawker "Osprey."]

February 1934

- (15) EMPLOI COMPARÉ DES CANONS ET DES MITRAILLEUSES DANS LA BATAILLE AÉRIENNE. [Comparative value of cannons and machine guns in air combat.] Captain Coint-Bavartot

The author concludes that the cannon favored primarily the defense against daylight bombardment since it permits the defensive pursuit to break up the bombing formations at greater distances. However, only the test of war will determine the effectiveness of these new aerial weapons, for combat introduces many factors which are absent in peace-time experiments. Hence, great prudence must be exercised in accepting conclusions based upon such experiments.

- (16) AVIATION MARITIME. [Naval aviation.] Naval Lieutenant Marinier
- (17) HISTOIRE DE L'AÉROSTATION. [History of lighter-than-air aviation.] (XIII) Sedeyn
- (18) L'AVIATION COLONIALE SUR LES CONFINS DU TCHAD. [Colonial aviation on the Tchad border.]
- (19) ÉTATS-UNIS.—LE PRIX D'ACHAT DU MÉTIÈREL AÉRONAUTIQUE AUX ÉTATS-UNIS. [Cost of aeronautical equipment in the United States.]
- (20) FRANCE.—LES IDÉES DIRECTRICES DE L'ORGANISATION DE L'ARMÉE DE L'AIR. [Basic ideas for the organization of the Air Force.]
- (21) FRANCE.—L'INSTRUCTION ET L'ENTRAINEMENT DES RÉSERVES DE L'AIR. [Instruction and training of Air Reserves.]
- (22) FRANCE.—L'ARMÉE MODERNE. [The modern army.]

- (23) FRANCE.—L'EXAMEN MÉDICAL POUR L'ENTRÉE DANS L'AVIATION. [Medical examination for flyers.]
- (24) GRANDE-BRETAGNE.—LES EFFETS ACTUELS DE L'AVIATION BRITANNIQUE. [Present strength of British aviation.]
- (25) ITALIE.—MESURES CONTRE LES BOMBARDEMENTS AÉRIENS. [Measures of protection against aerial bombardments.]
- (26) JAPON.—LES MANOEUVRES AÉRIENNES JAPONAISES. [The Japanese air maneuvers.]
- (27) JAPON.—TRANSPORTS MILITAIRES DANS LA CAMPAGNE DE JÉHOL. [Air transport in the Jehol campaign.]
- (28) GRANDE-BRETAGNE.—LES MANOEUVRES AÉRIENNES BRITANNIQUES DE 1933. [The 1933 British air maneuvers.]

March 1934

- (29) L'AVIATION SANITAIRE AU MAROC EN 1933. [The evacuation of casualties by airplane in Morocco during 1933.] Captain Breyton

The Air Regiment in Morocco has the following equipment in air ambulances:

15 Potez 29
4 Hanriot 437
3 Bloch 81.

These ambulances are not organically part of squadrons but are attached as needed to air units throughout Morocco.

Evacuation by air is reserved for the seriously wounded. When a medical officer decides that a casualty should be evacuated by air, he calls on the nearest air unit for transportation. The air commander receiving the request determines the manner of executing the evacuation.

In 1933, heavy fighting occurred in the Sagho region and in the Grand Atlas. In both areas, roads were few and evacuation overland to the nearest hospitals required from one and a half to two days. The summer heat aggravated infections and depressed the casualties. Evacuation by air was gradually adopted for all serious cases. In the second of these operations, sixty patients were evacuated from 9 to 12 August. In the year's fighting, 433 casualties were evacuated by air, consuming 805 flying hours. No ambulance

carried more than three patients in a single trip.

Two facts are noted: first, the excellent effect upon the morale of the troops who, fighting far from the coast, were assured of a speedy evacuation in case of serious injury; second, the cost, 7,500 francs per casualty, which prohibits the indiscriminate evacuation of casualties by air.

- (30) **GUIDAGE RADIOÉLECTRIQUE DES AÉRONEFS.** [The radio compass and radio beacon.] Bardot
 - (31) **L'AVIATION AUX DARDANELLES.** [Aviation at the Dardanelles.] Lieutenant Barjot
 - (32) **HISTOIRE DE L'AÉROSTATION.** [History of lighter-than-air aviation.] (XIV) Sedyn
 - (33) **LES TROIS TYPES D'ESCADRILLES BRITANNIQUES.** [The three types of British squadrons.]
- British aviation is divided into squadrons of three types: (1) The regular squadron of which all the personnel belongs to the regular army; (2) The auxiliary squadron of which only the commanding officer and a small group of men are of the regular army, the remainder being reservists; (3) The mixed squadron intermediate between the two previous types.
- (34) **L'ARMAMENT AÉRIEN DE L'ALLEMAGNE.** [The air armament of Germany.]

REVUE D'ARTILLERIE (France)

BY FIRST LIEUTENANT M.D. TAYLOR, F.A.

January 1934

- (1) **LES BROUILLARDS ARTIFICIELS.** [Artificial fog.] General Lugand

This article reviews the technical means of creating artificial fogs used by the principal armies of the world and adds a study of the tactical possibilities of such fogs. Of particular interest in the domain of technique are the estimates of ammunition and smoke-producing substances required to obtain fogs of varying dimensions and duration. Their tactical use should be based (the author asserts) on the following principles:

(a) Since the use of fogs is dependent upon favorable weather conditions, they should be planned only to supplement normal agencies (neu-

tralization by high explosives in the case of the artillery, camouflage, concealment, etc.).

(b) Used over larger areas, artificial fogs are of limited duration and can not be maintained over three or four hours.

(c) They are merely a passive agency and must be used in conjunction with the active measures, fire and movement.

(d) They must be built up rapidly and hence require a detailed technical organization.

(e) They are an economical agency capable of being employed in many situations.

Among the situations favoring their employment the author cites the following:

(a) The screening of assembly areas and troop movements.

(b) The concealment of columns in the approach march by day.

(c) The concealment of the smallness of units engaged in a reconnaissance in force (engagement).

(d) The blinding of the weapons of delaying forces.

(e) The blinding of batteries and troop columns during the preparation for a counterattack.

(f) The protection of covering forces during their withdrawal.

(g) The screening of a daylight withdrawal.

(h) The screening of areas against air attacks.

(i) The creation of artificial clouds during aerial combat.

(j) The execution of ruses and stratagems.

So extended a use of artificial fog will further increase the impedimenta to be carried by the forces in the field but the return seems to warrant the sacrifice. Such appears to be the opinion of the majority of the military nations. The added expense in money will be repaid by the reduced wastage in human lives.

- (2) **L'ARTILLERIE DANS LE COMBAT DES CHARSS MODERNES.** [The artillery in tank attacks.] By X . . .

The opinion has been often expressed that the use of rapid modern tanks in the attack of a position will reduce very considerably the artillery needed in the attack. This is not strictly exact.

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Consider an attack strongly supported by fast tanks in a compartment of the terrain extending to the depth of 1 mile into the enemy position. Admitting a rate of tank advance of 6 miles per hour, we may consider that the objective will be reached in 10 minutes. Also in consideration of the rapidity of maneuver of these tanks, it is probable that they will escape the enemy defensive barrages which can not be released instantaneously. However, they will encounter an infantry equipped with modern, quick-firing antitank weapons which have been sited and concealed on an average of 2 to 3 guns for each 1,000 yards of front. These are the principal targets of the supporting artillery which must be adequate to maintain their neutralization during the critical 10 minutes of the advance of the tanks. As the antitank guns are small and can not be accurately located in advance, a considerable mass of artillery will be needed to effect this neutralization.

Should there be an artillery preparation? Yes, if the artillery feels that it will be inadequate to protect the tanks by accompanying fires. This preparation will not attempt to destroy wire or trenches but will treat the antitank guns as were the machine guns in the World War attacks. The enemy communications net will be another appropriate target for the artillery. Consequently, although a considerable number of batteries will be needed, the ammunition requirements will be reduced and hence the time necessary to organize the attack.

- (3) UN DISPOSITIF ÉCONOMIQUE DE CHAMP DE TIR RÉDUIT. [An economical arrangement for smoke puff practice.] Major Ancelme
(4) SUR LES ORIGINES DE L'ARTILLERIE LÉGÈRE. [Concerning the origin of light artillery.] By General X . .

The history of light artillery is generally dated from the battle of Crécy in 1346. A manuscript in the library of Epinal indicates that cannons were used by French troops in defending Metz against the King of Bohemia in 1324.

- (5) ETATS-UNIS: TRANSPORT D'ARTILLERIE DE CAMPAGNE PAR AVIONS. [United States: Movement of field artillery by airplane.]

February 1934

- (6) AU SUJET DE LA PRÉPARATION DES TIRS D'ARTILLERIE. [The rapid preparation of fire, map data corrected.] Major Vernoux

The author proposes the preparation of data for a battalion by a central computing section. Batteries would record the basic map elements to a series of probable objectives and would also enter on their data sheets the fixed corrections for ammunition and matériel.

Let

B = basic map elements (map range, site, shift)

F = fixed corrections for ammunition and matériel

W = weather corrections

R = residual corrections which can not be calculated

E = adjusted element (range or deflection).

Then

E = B + F + W + R.

The battery having B + F already recorded for any target, the computing section will provide the elements W and R. This can be done if the following assumptions are allowed:

W is the same for all batteries of the battalion firing at the same range if within 1/5 of the mean range of the base piece which makes the adjustment.

R is the same for all batteries of the battalion at a given moment for the same range, if F is accurately known.

The author believes these assumptions correct if the batteries are tied together by a common survey.

- (7) COMMENT FUT PRIS LE FORT DU CAMP DES ROMAINS. [How the fort of the Camp of the Romans was captured.] General von Gebssattel

The story of the activities on the St. Mihiel front in September 1914 as related by the commander of the III Bavarian Corps.

- (8) LES POSSIBILITÉS DE TIR QUAND LA ZONE DES OBJECTIFS EST ASSIMILABLE À UN PLAN INCLINÉ. [The calculation of dead space when the

target zone may be represented by an inclined plane.] Captain Dil-lange

- (9) LES BATTERIES DU LOVCEN. [The Lovcen batteries.] (I) Major Revers

The action of the French siege batteries about Cattaro (Monte-negro) in September 1914.

March 1934

- (10) A PROPOS D'UN ANNIVERSAIRE. CLAUSEWITZ ET L'HISTOIRE. [Clausewitz in his relation to historical research.] General Fournier

On the anniversary of the first publication of the works of Clausewitz, the author proposes to examine critically the repeated affirmation by Clausewitz of the importance of the study of history in the mental formation of the military leader. He cites Paul Valéry in opposition to this affirmation: "History is the most dangerous product that the laboratory of the intellect has brought forth. Strictly speaking, history teaches nothing, for it contains everything and affords examples of everything." General Fournier examines these two conflicting attitudes and concludes that while history can offer nothing as a specific solution to a specific and present military situation, it can discipline the intellect, train it to perceive the essential elements of any military problem and, in a measure, serve as a substitute for practical experience in war.

- (11) LE TIR DANS LES ZONES PROFONDÉMEN T DÉFILÉES EN MONTAGNE. [Fire against deeply defiladed zones in mountainous regions.] Lieut.-Colonel Desrousseux

Even with flat-trajectory weapons, high masks can generally be cleared if the batteries are moved well to the rear and fire at maximum ranges. While this fire may lack precision because of the difficulties of liaison and of the increased probable error, its demoralizing effect on the enemy who, believing himself well sheltered, suddenly receives a surprise bombardment, is well worth seeking.

- (12) L'ARTILLERIE ANTIAÉRIENNE AUX ARMÉES. [Antiaircraft artillery with the field armies.] Major Lucas

A description of the organization of the antiaircraft defense in the French Army during 1918.

- (13) L'ORGANISATION DES FABRICATIONS D'ARMAMENT EN ALLEMAGNE. [The German munitions organization.] Lieut.-Colonel Morel

- (14) LES BATTERIES DU LOVCEN. [The Lovcen batteries.] (II) Major Revers

The continuation and conclusion of the study of the activities of the French artillery at the investment of Cattaro (Montenegro) in the fall of 1914.

- (15) RELÈVEMENT CALCULÉ SUR 3 POINTS. [The mathematical determination of the coordinates of a point, given three known points.] Lieutenant Saulnier

A slightly simplified trigonometric solution to a familiar topographical problem.

REVUE DE CAVALERIE (France)

BY LIEUT. COL. N.B. BRISCOE, CAVALRY

March-April 1934

- (1) UN EXERCICE DE CADRES DE CAVALERIE SUR LE TERRAIN. [A cavalry command post exercise.]

- (2) MARCHES-MANOEUVR ES DE LA 3^e D.C. DU 9 AU 20 SEPTEMBRE 1933. [Marches and maneuvers of the 3d Cavalry Division, 9-20 September 1933.] (II) By "X"

- (3) GOUVERNONS VERS LE LARGE. [Let us look at the broad picture.] (II) Colonel Argueyrolles

- (4) LE 10^e GROUPE A. M. A. C. DANS LA BATAILLE DE LA SOMME. [The 10th Group of Armored Cars in the Battle of the Somme.] Major Gallini

The British had employed tanks, but none were available for the French attack. A corps commander asked two of his front-line divisions whether they could use some armored cars (confined to roads), but the only roads in the direction of attack were under too much observation and fire to allow their use by cars.

The 82d Brigade, however, had two possible routes, a road and the tow-path of the canal. The armored cars with machine guns and two improvised cars with 37-mm. guns were used. The problem of getting them over their routes which had been well shot full of holes was solved by having a detachment of engineers slip along under cover at

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the road side. The missions of the cars were to knock out machine guns with the 37's and to pause at certain points to enfilade trenches and covered places. They travelled with the first waves.

By very careful planning for every contingency the cars materially assisted in the attack and later were able to exploit the success of an operation lasting several days.

REVUE D'INFANTERIE (France)

December 1933

BY CAPTAIN F. DURING, INFANTRY

- (1) LE PROBLÈME DES MITRAILLEUSES. [The problem of machine guns.] Colonel Jessen

Colonel Jessen, in a short article, again disagrees with Major Cazeilles, who recommends a battalion of four companies of sixteen light machine guns and the abolition of the heavy machine-gun company. (See RML No. 52, page 98.)

- (2) LES OPÉRATIONS DE NUIT. [Night operations.] Lieut.-Colonel Hassler (See abstract, page 55)

- (3) QUELQUES IDÉES SUR L'EMPLOI TACTIQUE DES MITRAILLEUSES DANS L'ARMÉE ALLEMANDE. [Tactical employment of machine guns in the German Army.] Major Cazeilles (See abstract, page 59)

January 1934

BY LIEUT. COL. W.R. WHEELER, INFANTRY

- (4) A PROPOS DES OPÉRATIONS EN MONTAGNE: DEUX QUESTIONS PRÉ-ABLES. [Mountain operations: Two preliminary questions.] General Dosse

General Dosse raises the question whether all officers should know the principles of mountain warfare and answers it by saying that about two-thirds of the whole theater of operation of the World War was composed of mountainous or very broken country; therefore, officers should study mountain warfare. General Dosse then asks the question to what varieties of terrain the principles are applicable, and answers this question by saying that while the principles do not change, the methods of applying these principles differ according to various terrain.

- (5) LA GUERRE EN MONTAGNE: UN GRAND PRÉCURSEUR: BOURCET.

[Mountain warfare: A great pioneer, Bourcet.] General Lugand

Of all military personalities known to history, there are few more interesting than Lieutenant General Pierre de Bourcet.

Enlisting as a volunteer in 1719 in the Lorraine Infantry Regiment, he transferred to the artillery in 1722, and in 1729 was transferred to the engineers in which he passed the greater part of his career. During his service and in addition to his duties as an engineer, he found opportunities for taking an effective part in numerous actions. Finally, either as *aide-maréchal des logis* or as *ménéchal-général des logis*, he had the duties of staff officer, then as chief of staff; from 1767 to 1771 was director of the staff school at Grenoble; in 1770, he was at the head of the general staff of the armies of the king.

It was while on these various duties that he took part in the following campaigns: 1733-1735 in Italy; 1741 in Westphalia; 1742 in Savoy; 1744-1748 in the Alps and in Italy; 1757-1761 in Germany; 1769 in Corsica.

He was a finished officer in every sense of the term, since he had served with the same capability and the same good fortune in the infantry, the artillery, the engineers, and on the staff. Also, the value of his extended technical and general learning had been confirmed by numerous campaigns during which he had constantly distinguished himself.

He was of Turenne's school, a school of leaders who meditated deeply over their wise plans and then executed them with soldierly energy. But the most human fruit of their meditations was always economy in the blood that had to be spilled.

The title of Bourcet's book, "Principles of warfare in mountainous countries," clearly indicates the intention of the author. He wrote it for the students in the staff school at Grenoble about 1767. At that time, Bourcet was nearly 70 years old, had sixty years of service, and had fought in twenty campaigns, most of them in the Alps.

The first idea that emerges in reading Bourcet's study is that he never separates war in mountainous regions from war in average terrain; he sets forth the principles that he considers are true for war in general—plain war—he then applies them to the special case of mountain warfare.

Bourcet first studies the terrain, an overwhelmingly important factor in these regions: "It takes almost the lifetime of a man to know, thoroughly, a region 200 to 250 miles long in the mountains, with the width of the different mountain chains varying from 75 to 110 miles."

"The regions where the mountain chains come closer together and suddenly narrow the valleys, must be the more carefully reconnoitered as there are some of these valleys in which it would be impossible to attack frontally any enemy that may have posted himself there. . . . These narrowed valleys, which often are the principal standbys of the defense, should therefore cause the high command to seek all possible means of turning them, or of deceiving the enemy by diversions that will weaken him at these points and which will render it easier to get through at these points." Finally, he concludes: "As a consequence of the nature of the routes, we are often led to break up the army into 'little packages.' But this method, which would be dangerous on the plain, is unavoidable in the mountains, and forms the science of this sort of war. When this method is used, detailed plans must be prepared to assemble the army rapidly when it becomes necessary."

After knowledge of the terrain has been secured, Bourcet applies it first in looking for army positions. This expression, "army positions," should not be taken in its narrowest sense, but in the sense of the field of battle, offensive as well as defensive.

Plans of maneuver must be prepared well in advance. One must, and can, base them upon an absolutely exact knowledge of the terrain, but also on the suppositions that can be made regarding the plans of the enemy; this is the job

of a perfectly organized and trained service of information. But, over and above this, the mind of the commander must be constantly on the alert and must formulate all of the hypotheses concerning the conduct of the enemy on the front, the flanks, and the rear.

Bourcet recommends maneuver. Diversions have the object of causing the enemy to abandon the positions that embarrass us, or to force him to do so by fighting. But an attack should not be made under insurmountable difficulties; they should be turned, or the accessible parts of the terrain should be utilized. Bourcet repeats this often; during his long career he had seen only too many examples where commanders forget these wise recommendations.

The commander should hold his forces connected, entrench them, and insure his communications so as to be able to move in strength to any threatened point and strike the enemy at his weak point.

If the attacker marches directly on the defensive position in order to attack it, he will not be able to profit by numerical superiority in a region where the front never can be very extensive and where numbers often are embarrassing.

(6) CONSIDÉRATIONS SUR L'ARTILLERIE EN MONTAGNE. [Observations on artillery in mountain warfare.] Lieut.-Colonel Desrousseaux

The employment of artillery in the mountains is characterized by dearth of ammunition, by difficulty of moving and of signal communications, by difficulty in the preparation of fire, and the lack of adaptability of certain types of guns. It will comprise, mostly: observed fire with observers in proximity to the units which the fire is intended to aid; neutralizing fires rather than fires of destruction. In general, the deployment will be limited and determined by the terrain. Command will be decentralized in accordance with the requirements of this terrain.

(7) EMPLOI DES ARMES D'INFANTERIE EN MONTAGNE. [Employment of infantry weapons in mountain warfare.] Lieut.-Colonel Barthelemy

If the combat procedures used in mountain warfare bring in modi-

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fications in the forms of maneuver, in the manner of using troops and material, it must be admitted that the use of infantry weapons also will be modified: their arrangement upon the terrain can not be the same as it is on the plain, and fire effects are far from producing the same results.

As a result of their extreme relief and variations in climate, the mountains exercise so preponderant an effect upon the use of infantry arms that ignorance of these two characteristics may lead to considerable consumption of ammunition and to failure of the operation.

Even when studied in a compartment of small extent, the terrain always shows up as more or less "tumbled," with its ravines, its numerous and deep folds, its steep slopes of varying sizes, its peaks, its fields of broken stone, its woods and multiple obstacles—all of which upset and wreck our plans. In the mountains, each zone of terrain requires special study and demands observation and reflection in order to enable it to be utilized from a military point of view.

To the same extent as does relief, climate reacts upon the conception, the development, and the form of combat, as well as upon the means put at work in any operation, however limited the operation may be. Fog, violent winds, cold, snow, and the dangers they bring about, the suddenness, brusqueness, and impetuosity of atmospheric changes are factors that must be considered by the commander in making his plans. And the executants, however modest may be their role, must always be ready to take advantage of the changes in climate or to adapt themselves, as far as is possible, to the new situations that flow out of them.

If, elsewhere, combat methods change little with the season, in the mountains it is quite different. In summer, one can move around nearly everywhere and, with time and the necessary effort, surmount the difficulties that we encounter in moving and installing ourselves. In winter, the snow alters the relief to some extent and upsets circulation conditions; observation is made

easier; effects of projectiles are very much diminished; cold forces men to devise and to occupy shelter. Between these two extreme seasons and varying with the altitude, there are intermediate conditions that alter and change from day to day, ceaselessly confronting troops with new problems to solve.

Mountain combat, therefore, is more varied and more complex in its development; it induces the exercise of more initiative at all echelons of command, its evolution is slower, its results can be more violent and more final than on the plain. For a given unit it extends along fronts that, generally, are wider and, on account of this, requires arrangements made longer in advance. Much flexibility of mind is essential in troop leading.

The field of battle has three dimensions: width, depth, altitude; more highly accentuated relief, difficulties resulting from the climate, longer and more difficult supply (a result of the nature and the scarcity of the routes of communication)—such are, summed up, the considerations that will modify the use of infantry weapons in mountainous terrain.

As the number and the power of these weapons is similar in all troop units, we can, and must, get the maximum output from them by assigning them judiciously, by adapting them perfectly to the characteristics of the mountains, by serving them skilfully, by conducting fires that exactly answer the necessities of the case, and by sureness and exactness of the observation and intelligence service.

Therefore, it must be an absolute principle, that the Alpine infantryman must be, an excellent shot and that the leader, whomever he be, must know perfectly how to direct and control the fire of his unit, in order that its effect may always wipe out the target aimed at.

- (8) GUERRE DE MONTAGNE: RECHERCHES SUR LA GUERRE MODERNE EN RÉGION BALKANO-ASIATIQUE. [Mountain warfare: An investigation into modern warfare in the Balkan-Asiatic region.] Major Loustaunau-Lacau

- (9) LA SECTION D'ÉCLAIREURS-SKIEURS EN FRANCE ET AU MAROC. [The ski-scout section in France and in Morocco.] Lieutenant de Metz
- (10) ITALIE: L'ARMÉE ITALIENNE ET LA MONTAGNE. [Italy: The Italian Army and the mountain.]
- (11) ITALIE: L'APPROCHE EN TERRAIN MONTAGNEUX. [Italy: The approach march in mountainous terrain.]
- (12) ITALIE: LE TIR EN MONTAGNE. [Italy: Fire in the mountains.]
- (13) ITALIE: L'ATTAKUE EN MONTAGNE: THEME ITALIEN. [Italian views on mountain attack.]
- (14) SUISSE: LES OPÉRATIONS D'HIVER EN MONTAGNE. [Switzerland: Winter operations in the mountains.]

REVUE DU GENIE MILITAIRE (France)

BY MAJOR P.C. BULLARD, C.E.

March-April 1934

- (1) UN PONT DE BATEAUX EN MATÉRIEL 1915 CONSTRUIT A MARMANDE PAR UN DÉTACHEMENT DU 6^e GÉNIE. [A pontoon bridge of Model 1915 equipment constructed at Marmande by a detachment of the 6th Regiment of Engineers.]

During the reconstruction of a permanent bridge over the Garonne River at Marmande, France, a pontoon bridge was used for a period of 10 months. Due to sudden and rapid rising and falling of the river as a result of floods, with oblique and irregular currents and eddies of velocities reaching more than 9 miles per hour, some special arrangements were made, which included the following:

(a) Two sites for the bridge, one with high approaches and one with low approaches, with arrangements for moving the bridge from one site to the other.

(b) Removal of the bridge when the current became too swift and oblique. In order to facilitate this operation, the bridge was constructed by the method of rafts.

(c) At one end, the trestles were placed in ponton boats instead of being placed upon the river bed, in order to permit a wider adjustment to river levels.

(d) At the other end, trestles were used, but the bottom being very unstable, with movements of

sand and gravel, the movable transoms were placed upon driven piles.

(e) Anchorages included single anchors, double anchors, and cables attached to shore and to the pier of the old bridge.

The preparations at the banks required about 10 days; the construction of the bridge itself took about 3½ hours.

The operation of the bridge under these circumstances proved to be very satisfactory.

- (2) UNE GRANDE OFFENSIVE VUE PAR UN OFFICIER TÉLÉGRAPHISTE. [A major offensive, as seen by a signal officer.] Major Durand

Written from the diary of the author, and covering the period of preparation of the French Third Army for the offensive directed by General Nivelle for the early part of the year 1917. The account deals with the personal impressions of the author, especially as influenced by changes in plans and orders, and also shows the general dispositions of the signal communications of the army. The execution of the attack is not covered.

- (3) AVEC LES SAPEURS DE LA 1/3, DE DINANT À LA MARNE. [With the 1st Company, 3d Engineers, from Dinant to the Marne.] Captain Simon

[This fragment of the history of a company of French engineers is of interest to the commander and general staff officer in regard to the parts which are here abstracted, notably concerning the demolitions along the Meuse River in the face of von Hausen's attack in August 1914. Other parts, not abstracted herein, are of interest to the engineer officer as showing details of the execution of demolitions, bridge construction, and other matters in the handling and battle incidents affecting engineer troops. It is desirable to go back and visualize the conditions of the battlefield and campaign, which conditions are easily forgotten in peace time, so that plans are frequently assumed to work out as projected.—Editor.]

After recounting the initial incidents of the mobilization, concentration and first contact, the author tells of an order being received from headquarters of the I Corps, to which the company was assigned, to plan and prepare the demolition of the Meuse bridges from Hastière to Yvoir. The demolition detachments were to be as small as possible

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and to be composed of regulars only; the explosives were to be obtained from Fort de Charlemont at Givet, and were to be transported by vehicles which were to be requisitioned. About 28 hours were allowed for the accomplishment of the preparations.

The detachments were each composed of a lieutenant or senior noncommissioned officer, a corporal, and about eight men. Their instructions were: to find the permanent mine-chambers in the bridges or to improvise them in case they were lacking; gather nearby the matériel required for the demolitions; obtain contact with the infantry defending the bridges and assist in the defense by construction of obstacles; the captain in charge would visit the works next day and leave the necessary explosives. Only the corps commander would be authorized to order the execution of the demolitions.

The drawing of the explosives was slow and took all night; the distribution to the various sites took nearly all of the next day. As an incident of the distribution, the company commander's chauffeur, being sleepy, let his car run off the road into the Meuse River. On climbing out, they were nearly captured by a German patrol.

BRIDGE AT HASTIÈRE.

As soon as the explosive arrived at the Hastière bridge, the one mine-chamber existent, in the pier nearest the east bank, was charged. The wires, with duplicate arrangements for firing, were led to a protected location behind a barricade on the west bank, where an officer or noncommissioned officer and a private, ready to fire the charge, were permanently stationed, and wire entanglement was placed at the eastern end of the bridge. These preparations took about 7 hours.

The Germans tried to seize the bridge on 22 August, and again next day, at which time an order arrived to destroy it. The pier was blown up, and the two adjacent trusses dropped into the river. However, the demolition was insufficiently complete, and that afternoon, under the protection of artillery and infantry fire, the German

engineers succeeded in building a foot bridge upon the remains of the two trusses. Upon this footbridge the German infantry crossed and occupied the west bank, and then continued their advance, but, since the destruction of the bridge deprived them of artillery support, they were later thrown back by counterattack.

BRIDGE AT ANSEREMME.

The preparations at the Anseremme bridge were similar to those at the Hastière bridge, except that at this point both piers had mine-chambers and both were charged. On the evening of 22 August the order arrived for execution of the demolition. The piers were both destroyed, and the three trusses resting upon them fell into the water; however, as at Hastière, it was possible to construct a footbridge, rather rapidly, on what remained. Additional explosive was sent for, and for 4 hours during the night the engineers worked to complete the demolition, without, however, being able to fully accomplish it. The work was started again in the morning, but the Germans attacked, crossed the bridge on ladders, and destroyed the detachment.

BRIDGE AT BOUVIGNES.

The permanent chambers in this bridge, which was of concrete, were entirely insufficient for the charges necessary to accomplish an effective demolition, and the charges had to be placed in the open air. About 2,400 pounds of melinite were placed to drop one of the spans vertically into the river by cutting it at each end.

At 5:00 PM on 22 August the order was received to destroy the bridge. The blast was fired, the demolition was satisfactory, a complete breach was made, about 100 feet across.

BRIDGES AT HOUX AND YVOIR.

Bridges at these two points were destroyed, after attack by enemy patrols.

BRIDGE AT DINANT.

This bridge was on the axis of march of the German Third Army. One of the piers near the eastern

bank had five permanent mine-chambers, each capable of containing about 45 pounds of explosive. About 5 hours time was required to prepare the charges and firing arrangements. An attack on the night of 22-23 August by the Germans failed to take the bridge. Next day the Germans attacked more heavily. In the afternoon word arrived from Ansremme that the Germans had crossed there and were threatening to turn the position of the French holding the Dinant bridge. The infantry was tired and ammunition was becoming scarce. Yet no order had been received to destroy the bridge. Soon the remaining men would be unable to hold. Towards 6:00 PM, the Germans prepared a further attack. The infantry commander, considering the situation desperate, consulted with the engineer officer, and they decided to take the responsibility of destroying the bridge. The charges were exploded. The demolition was effective, and incidentally destroyed a footbridge which the Germans had been building some 150 yards downstream.

During the retirement of the detachment, a noncommissioned officer was encountered, carrying orders to destroy the bridge. He stated that he was the third sent, since morning, to carry those orders.

If the bridges of Hastière, Ansremme, and Dinant had not been destroyed, but had fallen intact into the hands of the enemy, the French 51st Reserve Division would have been crushed by the enemy masses crossing the Meuse, the French I Corps might have been engaged in a combat which might have been disastrous for that corps and the French Fifth Army.

RETIREMENT ACROSS THE MARNE RIVER.

In the retirement across the Marne River, the company was ordered to build a ponton bridge across that river in order to make more crossings available for the movement of the corps. As the orders were received, the problem of the company commander consisted in marching about 25 miles,

unloading the ponton equipage, and constructing the 200-foot bridge. By initiating prompt reconnaissance, and by requisitioning transportation for his men, he enabled his men to accomplish the task which had been ordered, and the bridge was completed at about nightfall.

Next day, orders were received to prepare to destroy the bridge as soon as the passage of the troops should be completed, it being probable that the enemy would be so close as to prevent the bridge from being withdrawn safely. However, fearful lest the order to destroy the bridge should not arrive at the right time, and naturally regretful of destroying the ponton equipage, the company commander consulted with the colonel commanding the infantry of the rear guard. It was arranged that the last elements of the rear guard could be taken care of by a few boats. These were left, and the company started to take the bridge from the water. The operation was successful, and the last ponton wagon galloped under cover to the accompaniment of the fire of the leading Germans.

A week later, when the offensive was resumed at the Marne, the same equipage, since it had not been destroyed, was available and very useful in again crossing the Marne.

(4) EXERCICE SUR LA CARTE (SAPEURS-MINEURS): EMPLOI DU GÉNIE À L'ÉCHELON ARMÉE. [Map problem (Engineers). Use of Engineers of the Army.]

Solution and discussion of a problem which was presented in the January-February number of the *Revue du Génie Militaire*. A very interesting study to those who are studying the use of demolitions with armies.

REVUE MILITAIRE FRANCAISE (France)

BY MAJOR C.A. WILLOUGHBY, INFANTRY

January 1934

- (1) UN EXEMPLE CARACTÉRISTIQUE DE LA DIRECTION DE LA GUERRE PAR L'ENTENTE EN 1914-1918. L'EXPÉDITION DE SALONIQUE. [Characteristic example of the conduct of war by the Entente, 1914-1918:

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The expedition to Salonika.] Lieut.-Colonel Larcher

In studying this article, note a previous essay on a similar subject (November 1933: "La Direction de la Guerre des Empires Centraux"). It is apparent that the Allies in Salonika had the same difficulties as the Central Powers. After the failure at Gallipoli, twenty-three divisions were assembled in Salonika, composed of French, British, and Italian contingents; it took all of three years to establish harmony among these heterogeneous groups. Sarrail's period of command was ineffective. It was not till 1918, under Foch, that a new commander, Franchet d'Esperey, staged a real attack which put the Bulgarians out of the war. It is doubtful that this successful turn of events can be regarded as the direct result of "unity of command," since the Bulgarians, at that time, had become so deteriorated that ultimate success could have been expected under any conditions.

(2) ETUDE SUR LA DÉFENSE DES CÔTES ET RÉGIONS FORTIFIÉES. [Study on coast defense and fortified areas.] Colonel Morin

The author is apparently impressed with Nelson's famous dictum, "A man of war who attacks fortification must be mad." He proves his point by reference to the operation around Gallipoli, where the Turkish defenses were certainly of an inferior type and yet were ably maintained. The article covers the type of coast defense suitable for France, in some detail.

(3) LA MOBILISATION ÉCONOMIQUE À L'ÉTRANGER. [Industrial mobilization abroad.] Lieut.-Colonel de Gaulle

A comparative study, from a French viewpoint, of industrial mobilization in Italy, the United States, and Belgium. The article, while interesting is controversial, inasmuch as the effect of governmental institutions is not thoroughly covered; a comparison can hardly be made between countries, operating under congressional supervision (United States), a personal dictatorship (Italy), or a parliamentary control (Belgium).

(4) RECONTRES D'ARMÉES. [The collision of armies.] General Lemoine

This is an interesting strategic study of the meeting engagement of large units; the author makes a clever analysis of the term "recontre," or meeting engagement; this military term implies a sudden encounter, fraught with surprise, etc. He doubts that the surprise element applies to such enormous masses as armies, especially under modern reconnaissance means. He uses the term, rather, in the sense of a collision, that is inevitable, but the details of which can not be foreseen. Lemoine selects Eckmuhl in 1809, the Sha-Ho in 1904, the Ardennes and the Marne in 1914. In each case, neither side knew precisely the scheme of maneuver of the opponent. At Eckmuhl Napoleon admitted not having a plan to begin with. Oyama initially conducted a frontal attack, or attack on an extended front, but was eventually successful on the Sha-Ho, where he had no initial expectations. During the World War, the battles of the frontiers were successful for the Germans on the whole, while they failed in the real decisive action of the Battle of the Marne.

The object of the author, in the analysis of his examples, is the capacity of the supreme commander to adapt himself to a fluctuating situation, based, of course, on knowledge furnished by efficient intelligence measures.

A comparison of the actions described, give a very clear picture of what might be termed, the "general physiognomy of battle," as conducted by armies. There is an initial stage of "gaining contact," involving partial surprises, and possibly adverse results, depending on the degree of development (i.e., combat readiness) of the units involved; a series of these actions represent the "front" where an "equilibrium" is sought. Eventually two types of action emerge from a mass of minor operations: (a) The front of action is relatively narrow; in that case there must be vulnerable flanks, and an advantage accrues to the side which operates a flank attack; this is what happened

at Eckmuhl, in the Ardennes and on the Marne; this might have happened at the Sha-Ho if Kuropatkin had not given up. (b) The front is extended and can lead to (partial) rupture; breakthrough attempts, leading to rupture, are occasioned by effort against strong points, or important tactical localities; this is what happened during the Battle of the Ardennes.

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- (5) LA STRATÉGIE ALLEMANDE EN 1918. [German strategy in 1918.]
(III) General Loizeau

This is a continuation of a series; the previously related number appeared in the December issue. It will be recalled that Ludendorff considered a variety of plans, such as across the heights south of the Scarpe ("Mars" Offensive), on the left bank of the Oise ("Archangel" Offensive) and in the direction of Hazebrouck ("St. George" Offensive); the relative merits of each effort were gone into and the "Michel" Offensive finally decided on, in preference to other localities. This attack is pretty well known; Loizeau makes a point that this plan had already weakened as regards a final elimination of the British.

The author proceeds to analyze—and criticize!—Ludendorff's action after 21 March; he holds that Ludendorff's initial strategy was sound, but it depended entirely on British reaction, and they proved to be less easy to defeat than he had calculated. The point Loizeau makes, is that Ludendorff changed his initial strategic plan to conform to a series of great tactical successes, as at the junction of the British and French lines, which diverted him from the initial plan to drive the British away from the French. This view is not generally accepted, however. There is a good map material with this study; the sketch maps show clearly how the German attacks became more and more eccentric in the four weeks immediately following 21 March.

- (6) LA GUERRE SAINTE DES SENOUSSYA. [The Holy War of the Senoussyas.] (Second Part: III) General Meynier and Major Filio

The third instalment of a series, dealing with the joint operations

against the Senoussi, in Northern Africa.

- (7) FRANCHISSEMENT DES COURS D'EAU EN PÉRIODE DE MOUVEMENT. LA BATAILLE DE LA MEUSE (25 AU 28 AOÛT 1914). [River crossings in open warfare. The Battle of the Meuse, 25 to 28 August 1914.] (II) Colonel Baills and Captain Gazin

This is a continuation from the previous instalment in the December 1933 number. The general background of the operation is as follows: The German Fourth Army intended a crossing of the Meuse, in the vicinity of Sedan, opposed by the French Fourth Army. The French commander, de Langle de Cary, found that his right wing was in a position to attack the right Corps of the German Army. This instalment covers this particular operation. The article is rather detailed, requiring careful study; technical details are given for the German crossing as well as the French disposition for the defense.

- (8) ÉTUDE SUR LA CAVALERIE DANS L'EXPLORATION. [Cavalry reconnaissance.] Major de Bardies-Montfa

This article is linked, in substance, with General Boucherie's "La Cavalerie Moderne et son evolution," in the November 1933 number. The author analyzes the operations of Sordet, in the Battle of Frontiers; it will be recalled that Sordet's Cavalry Corps covered an enormous area without actually determining vital information. The article is continued with a review of the actual situation of the cavalry and their continued usefulness.

- (9) NOTIRES SUR L'ARMÉE SUISSE. [Notes on the Swiss Army.] Colonel Aublet

A study regarding organization and mobilization of the Swiss Army.

March 1934

- (10) LA STRATÉGIE ALLEMANDE EN 1918. [German strategy in 1918.]
(IV) General Loizeau

This is the fourth instalment of a general series, covering the operations on the Chemin des Dames and east of Rheims. Ludendorff had decided on a holding attack against the French, to be followed by a decisive attack against the British, in order to finish them. The operation on the Chemin des Dames

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turned out to be a great tactical success, which induced Ludendorff to push on, abandoning for the time being the attack against the British. It is possible that a tactical success obscured the strategical objective; this is one of the great controversies arising from the War.

- (11) LA GUERRE SAINTE DES SENOUSSY. [The Holy War of the Senoussy.] (Second Part: IV) General Meynier and Major Filio

A further instalment of the series dealing with the allied operations in northern Africa; this chapter deals particularly with the British campaign against the Senoussi, in a threat to the Nile valley.

- (12) FRANCHISSEMENT DES COURS D'EAU EN PÉRIODE DE MOUVEMENT. LA BATAILLE DE LA MEUSE (25 AU 28 AOÛT 1914). [River crossings in open warfare. The Battle of the Meuse, 25 to 28 August 1914.] (III) Colonel Baills and Captain Gazin

The third instalment of a general series. The German crossing of the Meuse and the Chiers are covered in extensive detail; the article traces this operation from the inception to its execution. An overlay map adds much to an understanding of this type of action.

- (13) L'ORGANISATION ET LE FONCTIONNEMENT DE LA GARDE NATIONALE DES ÉTATS-UNIS. [Organization and function of the National Guard, United States Army.] Captain "X"

A general study of the organization and function of the National Guard of the United States; a creditable and reliable account.

RIVISTA DI ARTIGLIERIA E GENIO
(Italy)

BY CAPTAIN F. DURING, INFANTRY

January 1934

- (1) CONCETTI DI IMPIEGO DELL'ARTIGLIERIA CONTROAEREI. [Ideas on the employment of antiaircraft artillery.] Colonel Castagna

Colonel Castagna gives his views on the employment of antiaircraft artillery. He distinguishes between the technical object—that of bringing down an aeroplane, and the tactical object—that of preventing it from attaining its objective.

Antiaircraft guns must be in constant readiness; observation must be carried out, if possible, up to a distance of 8 to 12 miles from the batteries. At night, illumination should be provided over a distance of about 4 miles, that is, for a period of 2 minutes, on flying aircraft. The author assigns armament as follows:

To divisions: Automatic rifles and machine guns against low-flying aircraft.

To corps: Groups of 75-mm. guns on the lines of probable flight of enemy aircraft.

To armies: Guns of heavier caliber (100- to 120-mm.)

- (2) L'ESERCITO INGLESE ED IL PROBLEMA DELLA MECCANIZZAZIONE. [The progress of mechanization in the British Army.]

The first part of the article deals with the organization of the British Army, the purposes for which it is maintained, the supply of officers, and regimental life generally.

With regard to mechanization, the British feel a certain amount of justifiable pride from the fact that, in this respect, they are giving a lead to the rest of the world.

In the first post-war period, 1919-23, an attempt was made to organize the tanks that remained over from the war into battalions. In the second period, from 1923 to 1926, the idea was to form mobile units of cavalry, motor-drawn artillery, infantry in trucks, armored cars, and tanks. In the third period, the idea was developed of forming a completely mechanized force capable of entirely replacing cavalry, artillery, and infantry.

- (3) IDEE FRANCESI SULL'IMPIEGO DELL'ARTIGLIERIA IN MONTAGNA. [French views on the employment of artillery in mountain warfare.]

A grande unité specialized for mountain warfare is an infantry division of two brigades, each consisting of two regiments, with a mixed train, partly carried on pack-animals, and partly horse-drawn or mechanically propelled. The artillery of such a division consists usually of a regiment of pack-artillery and a regiment of horse-drawn howitzers.

There are three types of mountain guns in France: the 65-mm. (1906 model), forming four mule-loads, the 75-mm. Schneider (1919 model), forming seven loads, and the 105-mm. Schneider (1919 model), forming seven loads.

It would be an advantage if a single type of pack-saddle for all loads could be introduced, as in the case of the Skoda 75. Mountain artillery should be capable of firing at high angles of elevation (60° to 70°), and the gun should have a variety of charges to enable it to fire with a very reduced charge at short range. The ballistic problem at high elevations becomes a complicated one, since wind, temperature, and pressure are liable to very sudden changes.

- (4) L'ORGANIZZAZIONE DELLA PROTEZIONE COLLETTIVA ANTIGAS. [Protection against gas.] Lieut.-Colonel Biagioli
- (5) MOTORI A IDROGENO. [Motors and hydrogen.] (I) Lieut.-Colonel de Braud
- (6) MOBILITÀ E POTENZA DELLE ARTIGLIERIE IN TERRENO DI MONTAGNA. [Mobility and power of mountain artillery.] Colonel Pavari

Colonel Pavari discusses the merits of different types of guns suitable for mountain warfare, and comes to the conclusion that there are only two suitable types: long-range guns with mechanical traction, and pack-artillery.

February 1934

- (7) FANTERIA, TRUPPE CELERI E GENIO (PROBLEMI DI COOPERAZIONE). [Co-operation between infantry, fast troops, and engineers.] Major Cappuccini

This is a prize essay by Major Cappuccini on the relationship between infantry, fast troops, and engineers. After a brief historical survey, the writer quotes the pre-war regulations laying down what the relations were. At the outbreak of the war, all countries found that their armies' supply of engineers was hopelessly inadequate, and that the regulations defining the duties of the engineers were anything but clear. Not only were the engineers insufficient in numbers and inadequately equipped, but engineer stores

were too few and badly arranged, and means of communication were defective.

During the war there were many examples of the flagrant misuse of engineers, mostly on tasks that should have been carried out by the infantry. This occurred in every belligerent army.

During the war great changes took place. Those that took place in the Italian Army and other armies are described at some length. Many specialized units were formed; infantry was given its own detachment of pioneers, detachments of signal men were attached to infantry units, and some armies, notably the British and American, organized a signal corps independent of the engineers. The amount of technical equipment was increased many times over.

The author gives in detail the organization of divisional engineers in nine of the principal armies. He discusses at considerable length, the duties of engineers in relation with other troops, and what these duties will be in the future.

- (8) LE ARTIGLIERIE DIVISIONALI NELL'AVVICINAMENTO. [Division artillery in the advance.] Lieut.-Colonel Bravo

In this article, a comparison is made between the French and Italian official regulations dealing with the action of artillery in the approach to an enemy position.

- (9) MODALITÀ E MEZZI D'ADDESTRAMENTO DELLA RADIOTELEGRAFIA PRATICA. [Radio instruction.] Lieut.-Colonel Supino
- (10) LE CORAZZATURE DEI ARMATI E LE ARMI ANTICARRO. [Tanks and antitank weapons.] Lieut.-Colonel Caracciolo

There are two schools of thought with regard to the design and armor of tanks: (1) those who believe in high speed and light armor, which is, roughly, the British system, (2) those who believe heavy armor to be a primary consideration, involving a diminution of speed, which may be taken as the French system, although, as a matter of fact, the French possess all conceivable different types.

Lieutenant Colonel Caracciolo quotes German, French, and Polish

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authors on the subject of tanks and antitank weapons, also the British regulations for a mixed battalion of tanks in the attack.

The conclusion he arrives at is that, for repelling an attack of mixed tanks, a gun is required of a caliber of 40 to 50-mm., with a muzzle velocity of 1,900 feet per second, while for light tanks, with 9 to 10-mm. of armor, a light weapon with a caliber of 12 to 15-mm. and a muzzle velocity of 2,700 feet per second is most suitable.

The author concludes with an example, in which he assumes an attack carried out on a 400-yard front, held by a battalion, by two companies of tanks (one of 16 light, and one of 16 medium tanks). His calculations show that three guns of 40 to 50-mm. would be required to put the medium tanks out of action and that, similarly, three machine guns of 12 to 13-mm. would be required to deal with the light tanks. In both cases the number of antitank weapons is greatly in excess of what is likely to be available.

- (11) MOTORI A IDROGENO. [Motors and hydrogen.] (II) Lieut.-Colonel de Braud

March 1934

(Technical Supplement)

- (12) UN NUOVO METODO DI CALCOLO DELLA TRAIETTORIA PER ARCHI SUCCESSIONI. [A new method of calculating trajectories.] Lieut.-Colonel Bruno
(13) IL TRAFFICO RADIOCAMPAGNA. [Radio-traffic.] Colonel Sacco
(14) QUALCHE CONSIDERAZIONE SULLA PRECISIONE DEI TELEMETRI MONOSTATICI. [The accuracy of range finders.] Brigadier General Calichopulo

ROYAL AIR FORCE QUARTERLY (Great Britain)

July 1934

- (1) "IS AIR CONTROL OF UNDEVELOPED COUNTRIES MORE INHUMANE THAN CONTROL BY OLDER METHODS?" (Gordon-Shephard Memorial prize essay, 1933.) Flight-Lieutenant Kingston-McCloughry
(2) THE SOUTHERN DESERT OF IRAQ, 1927-8. IV.—KOWEIT.

- (3) THE INFLUENCE OF LEADERSHIP ON BOMBER FORMATIONS
(4) THE AIR-BORNE TORPEDO. By "R.W.W."
(5) NIGHT RECONNAISSANCE. Part II. Squadron-Leader Colyer
(6) CAPTAIN PADDY BURKE'S LAST FLIGHT. McDermott and Collinson

ROYAL ENGINEERS JOURNAL (Great Britain)

June 1934

- (1) TEMPORARY ROADS DEPARTMENT—IV. By "Roadsurvey"
(2) KHEDIVE ISMAIL'S DISPATCHES TO MAJOR-GENERAL CHARLES GORDON. Lieut.-Colonel Moffitt
(3) ENGINEER RECONNAISSANCE. Captain Wood
(4) MISHMI, 1912-13. Lieut.-Colonel Britten
(5) CHANGING GROUND LEVELS IN BENGAL. Hunter
(6) A DESERT RECONNAISSANCE SURVEY. Major Panet
(7) A DEMOLITION RAID. By "Anonymous"
(8) REPORT ON THE DEMOLITION OF THE L.M.S. RAILWAY POSTERN ARCHES, AT SHOTTELE, BY ROYAL ENGINEER UNITS OF NORTHERN COMMAND, ON 24TH SEPTEMBER, 1933

ROYAL TANK CORPS JOURNAL (Great Britain)

May 1934

- (1) LOST CHANCE AT CAMBRAI. Lieut.-Colonel Feuerherd
(2) SUMMARY OF TANK OPERATIONS, 1916-18. (III) Major-General Fuller
(3) THE FIRST—AND LAST—NIGHT ATTACK WITH TANKS. Captain Hickey

June 1934

- (4) SUMMARY OF TANK OPERATIONS, 1916-18. (IV) Major-General Fuller
(5) A COMPANY OF TANKS: THE FIRST BATTLE OF BULLECOURT (APRIL 11TH, 1917). Major Watson

SIGNAL CORPS BULLETIN

May-June 1934

- (1) SIGNAL COMMUNICATIONS OF THE NINTH GERMAN ARMY IN THE LODZ OPERATIONS FROM NOVEMBER 11 TO 26, 1914. Captain Cansler
(2) THE METEOROLOGICAL WORK IN THE JOINT ANTIAIRCRAFT-AIR CORPS EXERCISES, FIFTH CORPS AREA, MAY 1933. Captain Sherry

- (3) A PROBLEM IN THE PSYCHOLOGY OF TRAINING: THE TRANSFER OF TRAINING. Major Pendleton
- (4) THE APPLICATION OF TELETYPE-WRITERS TO MILITARY SIGNALLING. Captain Browning
- (5) GENERAL LA FAYETTE: SOME NOTES ON HIS CONTRIBUTION TO SIGNAL COMMUNICATIONS. Major Sanger
- (6) THE CONTRIBUTION OF THE CRYPTOGRAPHIC BUREAUS IN THE WORLD WAR. (IV) Gylde

WEHR UND WAFFEN (Germany)

BY CAPTAIN F. DURING, INFANTRY

January 1934

- (1) VEREINHEITLICHUNG DES ARTILLERIEGERÄTS. [Standardization of artillery.] Major Schneider, Retired

The German artillery had so many different caliber guns after the war that the question of control and ammunition supply became very difficult. The author offers a solution to this problem by recommending that the minimum caliber should be 105-mm. and the maximum caliber, 210-mm. The 77-mm. gun has now become obsolete as the 105-mm. gun has been found to be the better gun; even the firing of gas from the 105-mm. gun is considered more advantageous. Division artillery should have only one caliber. The 105-mm. caliber seems to be the logical piece for the division artillery.

- (2) DIE KÜSTENARTILLERIE DER VEREINIGTEN STAATEN VON AMERIKA. [The coast artillery of the United States.] Colonel Blümner, Retired

- (3) DURCH SPRENGEN 1914 AUSGEFÜHRTE SPERREN WÄHREND DES RÜCKZUGES DER ENGLÄNDER VON MONS BIS HINTER DIE MARNE. [Demolitions carried out at Mons and during the retreat of 1914.]
(I) Major General Buckland

A German translation of the article which appeared in the March and June 1932 numbers of the *Royal Engineers Journal*.

- (4) DIE 20 MM-MASCHINENKANONE BREDA. [The 20-mm. machine cannon Breda.] Major Däniker
- (5) FORTSCHRITTE IN DER KONSTRUKTION DER PFERDEBESPANNEN FAHRZEUGE. [Improvement in the construction of animal-drawn vehicles.]
(I) Lieut. Colonel Giesecke, Retired

February 1934

- (6) ZUR VORGESCHICHTE DER MINENWERFER. [The origin of the Minenwerfer.] Major Mouths, Retired
- (7) GROSSE SCHUZWETEN UND BEOBACHTUNG. [Observation of fire at the longest ranges.] By "K 3"

In spite of the known ballistic disadvantages of fire at the longest ranges, and in spite of constructional difficulties of gun and ammunition connected therewith, it is astonishing what maximum ranges are being demanded, striven for, and even obtained by all the artilleries in the world. The permanent arrangements of stationary warfare facilitated all observation even at the greatest ranges, but how is such observation to be obtained in the war of the future when mobile warfare is the rule and stationary warfare the unwelcome exception? Harassing fire may be left out of account; a hit is here only blind chance; but for effective fire observation of some sort is imperative. Without it in mobile warfare there can be no artillery success, and no excessive expenditure of ammunition at the longest ranges can make up for the want of it. Neither observation from the air nor the work of the field survey sections can be relied upon exclusively; the artillery must learn how to help itself. This must be done by using the most capable and boldest artillery officers for forward observation in cross-country motor vehicles with radio-telephone sets. They must be as mobile as cavalry patrols, accompanying the advance guard as far forward as possible, moving quickly from one point of advantage to the next, reporting targets and correcting fire. It is not likely that quite young officers would be suitable for this work, as it needs trained observers and experienced fire leaders.

- (8) DURCH SPRENGEN 1914 AUSGEFÜHRTE SPERREN WÄHREND DES RÜCKZUGES DER ENGLÄNDER VON MONS BIS HINTER DIE MARNE. [Demolitions carried out at Mons and during the retreat of 1914.]
(II) Major General Buckland
- (9) FORTSCHRITTE IN DER KONSTRUKTION DER PFERDEBESPANNEN FAHRZEUGE. [Improvement in the con-

Periodical Articles—Catalog

struction of animal-drawn vehicles.]
(II) Lieut. Colonel Giesecke, Retired

- (10) VERWENDUNG VON KAMPFWAGEN IN DER VERTEIDIGUNG VON ABSCHNITTEN IN VERBINDUNG MIT GELÄNDEBEFESTIGUNGEN. [The employment of tanks and combat cars in the defense.] (I) Frantz. (See abstract, page 46.)

March 1934

- (11) MENSCH UND TECHNIK IN NEUZEITLICHEN HEEREN. [Man and technique in modern armies.] Captain Hänert, Reserve

The author answers the questions about the relation between man and technique by saying that the technical training would not affect the basic qualifications of a field soldier nor the characteristics of a leader. After all is said and done, soldiers and leaders are born and not made.

- (12) VERWENDUNG VON KAMPFWAGEN IN DER VERTEIDIGUNG VON ABSCHNITTEN IN VERBINDUNG MIT GELÄNDEBEFESTIGUNGEN. [The employment of tanks and combat cars in the defense.] (II) Frantz. (See abstract, page 46.)

- (13) DURCH SPRENGEN 1914 AUSGEFÜHRTE SPERREN WÄHREND DES RÜCKZUGES DER ENGLÄNDER VON MONS BIS HINTER DIE MARNE. [Demolitions carried out at Mons and during the retreat of 1914.] (III) Major General Buckland

WISSEN UND WEHR (Germany)

BY CAPTAIN F. DURING, INFANTRY

February 1934

- (1) FÜHRUNG IN KOALITIONSKRIEGEN. [Leaders in wars of coalition.] Lieut.-Colonel Müller-Loebnitz

The author cites the following lessons learned from wars of coalition:

(a) A war of coalition has a chance of victory only if the allies are united by the same interests. Special and selfish interests must be sacrificed.

(b) Clear and simple preparations in time of peace, treaties, military conventions, and conferences between military leaders are advantageous. But more important is that all persons in power are in accord, and trust each other implicitly. They must understand

the limitations which exist due to different national characteristics.

(c) The coalition must not seek only political or military ends. Both political and military aims must be combined.

(d) Theoretically, the best form of leadership is unity of command under one commander-in-chief.

(e) Frequent meetings of all military and political leaders, even in our times of highly developed communications, is very essential.

(f) A great leader, whether military or political, can do much to iron out difficulties, which will arise again and again, especially if the strength of the allies differ.

(g) Coalition with poorly led states are a risk and such states should not be included in the coalition.

(h) Even though everything seems to be ideal for a coalition, it is only the greatest leadership which will be able to maintain such ideal conditions.

- (2) WAS GIBT UNS MOELLER VAN DEN BRUCK FÜR DIE BEURTEILUNG DER HEUTIGEN WEHRPOLITISCHEN LAGE DEUTSCHLANDS? [The present military-political situation of Germany, according to Moeller van den Bruck.] Lieut. General v. Metzsch

- (3) WISSENSWERTES AUS DEN GRÖSSZEREN FLOTTEMANÖVERN DES JAHRES 1933. [The naval maneuvers of 1933.] Admiral Gadow

- (4) LEHREN AMERIKANISCHER KRIEGSAUSHEBUNG. [Lessons drawn from the American draft of 1917.] Major Adam

- (5) DIE SCHLACHT BEI VALMY IN GOETHESCHER BELEUCHTUNG. [The battle of Valmy, 1792, according to Goethe.] First Lieutenant Teske

March 1934

- (6) PRINZ EUGEN UND FRIEDRICH DER GROSSE. VORTRAG VOR DEN OFFIZIEREN DES REICHSWEHRMINISTERIUMS AM FRIEDRICHSTAG 1934. [Prince Eugene and Frederick the Great. A lecture delivered to the officers of the German War Department.]

- (7) GRENZEN EINHEITLICHER LEITUNG IM BÜNDNISKRIEG. AUF GRUND DES III. UND IV. BANDES DES AMTLICHEN ÖSTERREICHISCHEN KRIEGSWERKES. [Limitation of unity of command in a war of coalition. Based on Volumes III and IV of

the Austrian Official History of the War.] v.Schäfer

A review of Volumes III and IV of the Austrian Official History of the War; special stress being laid on the fact that Conrad and Falkenhayn disagreed on many points and were not always in accord as to aims and objectives.

- (8) DIE BRANDENBURGER IN DEN TÜRKENKRIEGEN. [The Brandenburgian in Turkish wars.] Metz
- (9) KAMPFWEISE, KULTUR UND GE-SCHICHTE. [Methods of combat, culture and history.] Major Schmitt-henner, Retired
- (10) POLITIK UND WEHRMACHT IN DER TSCHECHOSLOVAKIE. [Politics and national defense in Czechoslovakia.]
- (11) LUFTEMPFINDLICHKEIT. IHRE GE-POLITISCHEN UND WEHRPOLITI-SCHEN FORDERUNGEN. [Air sensitiveness. Its geo-political and military political demands.] Captain v.Moisy

This article, written for German consumption, deals with the fact that Germany has no air force, but nevertheless should make some preparation for air defense.

CURRENT HISTORY

June 1934

- (1) IF JAPAN FIGHTS. Major General Graves

- (2) MONGOLIA AWAKENS. Oliver

FOREIGN AFFAIRS

July 1934

- (1) THE FOREIGN POLICY OF THE DUCE. Grandi
- (2) THE STRATEGY OF ANOTHER RUSSO-JAPANESE WAR. Betts
- (3) ARMS MANUFACTURERS AND THE PUBLIC. By "J"
- (4) THE TRADE EXPANSION OF JAPAN. Seroggs

FOREIGN POLICY ASSOCIATION: FOREIGN POLICY REPORTS

23 May 1934

- (1) TARIFF BARGAINING UNDER THE NEW DEAL. Stewart

6 June 1934

- (2) THE SEVENTH PAN-AMERICAN CONFERENCE—MONTEVIDEO. Thomson

20 June 1934

- (3) POLITICAL STRUCTURE OF THE THIRD REICH. Wertheimer

4 July 1934

- (4) THE INTERNATIONAL LABOR ORGANIZATION. Cheyney

18 July 1934

- (5) POLITICAL FERMENT IN FRANCE. deWilde

Section 5
ACADEMIC NOTES, C. & G.S.S.

REPRINT OF CURRENT SCHOOL MEMORANDA, WHICH AFFECT
INSTRUCTIONAL PROCEDURE OR TACTICAL DOCTRINES.

CONTENTS

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Tactics and Technique—Cavalry (Mechanized).....	133
Mechanized Brigade in Attack.....	135
Combat Intelligence.....	144

Tactics and Technique—Cavalry (Mechanized)

SPECIAL REFERENCE DATA

[Memorandum of 26 March, 1934]

	Paragraph
Organization.....	1
Characteristics of means.....	2

1. **ORGANIZATION.**—*a. Basic.*—See *Reference Data, C. & G.S.S., 1933*, page 42, Table 50.

b. Field artillery.—Truck-drawn.

c. Engineers.—Motorized troop consists of two platoons each of three squads. Total personnel of troop about 100. Transportation, medium and light trucks.

d. Chemical troop (motorized).—Same as chemical company (completely motorized), but transportation is the light cross-country truck (same as in artillery).

e. Antiaircraft artillery.—Attached as needed. The usual complement for a mechanized cavalry brigade will vary from one machine-gun battery to a detachment such as usually accompanies an independent infantry division.

f. Aviation.—Observation aviation may be attached or may cooperate.

2. **CHARACTERISTICS OF MEANS.**—*a. Combat Car.*—(1) *Type.*—Comparable to light fast tank, of wheel-and-track type. See *Cavalry (Mechanized), C. & G.S.S., 1933*, paragraph 10, and mimeographed Reference Matter issued on tanks.

(2) *Signal communication.*—(a) All command cars (that is, down to include platoons) have sending and receiving radio, both voice and telegraph: voice effective up to ten miles; telegraph up to 50 miles.

(b) *Other combat cars.*—Receiving, only.

NOTE: See also *Cavalry (Mechanized), C. & G.S.S., 1933*, paragraph 20.

(3) *Supply and maintenance.*—See *Reference Data, C. & G.S.S. (Table 50, 1933)*, and *Cavalry (Mechanized), C. & G.S.S.*, paragraph 21.

b. Armored car.—See *Reference Data, C. & G.S.S. (Table 4, 1933)* as to speeds. For other factors, see *Cavalry (Mechanized), C. & G.S.S., 1933*, Section I, except that all armored cars will be assumed to have both sending and receiving radio equipment, including both voice and radio.

c. *Carriers, personnel.*—Half-tracked (removable track), unarmored' automobiles. Speeds, same as combat car.

d. *Prime-movers, artillery.*—(1) *Field artillery.*—Half-tracked (removable track) light trucks; capabilities of movement: on roads, same as armored cars; across country, see *Reference Data, C. & G.S.S.* (Table 4, 1933). (2) *Antiaircraft artillery.*—Capabilities of movement, same as field artillery.

e. *Trucks. (Cargo, gasoline-tank, water-tank, and special types.)*—Capabilities of movement, same as armored car.

NOTE.—All vehicles are therefore assumed to have the same road mobility; of the cross-country elements, the artillery has the lowest mobility.

f. *Bridging elements.*—Pontons, $7\frac{1}{2}$ -ton, attached as required. Pontons are towed on trailers by trucks; two tractors for limited cross-country movement are also carried on trucks. Each $7\frac{1}{2}$ -ton ponton platoon can build about 200 feet of $7\frac{1}{2}$ -ton bridge or half that length of 15-ton bridge. It can also build a bridge of trestles, only, $7\frac{1}{2}$ -ton or 15-ton, 48 feet long. The $7\frac{1}{2}$ -ton ponton and trestle bridges will carry all loads of the mechanized brigade as herein organized. A $7\frac{1}{2}$ -ton ponton bridge can be built at the rate of 100 feet per hour, and a 15-ton bridge at half that rate. A bridge of trestles, only, 48 feet long, will require about an hour.

g. *Engineer tools, etc.*—(1) The engineer troop includes a crane, and also an air compressor with a drill and other appropriate tools. Troop headquarters carries 1000 pounds of explosive.

(2) Each platoon has a light tractor and a tool trailer, as well as demolition equipment including 100 pounds of explosive; with this explosive, the following can be accomplished: cut 100 steel rails; cut ten 20-inch trees with external charges, or thirty-two with internal; destroy 1 abutment of ordinary highway bridge; disable 4 wooden highway bridges or 2 steel bridges or 1 concrete highway bridge; can destroy a railroad bed at a culvert or make an effective crater in a first-class highway *only if* conditions exceptionally favorable.

(3) *Time and means for demolitions.*—(a) Steel bridge (dropping the trusses): 3-5 men, one hour.

(b) Concrete bridge, 4-5 men, two hours, with the troop air compressor and drill; otherwise, about five hours.

(c) Culvert: 3-5 men, 1-2 hours.

(d) Road-craters: 200-300 lbs. explosive, one hour, if small passages (as pipes) available for use as mine chambers; if not, by using earth-augur (one per company), 3-4 hours in soft soil.

h. *Antitank mines.*—Troop headquarters includes 100 antitank mines (of type shown in *Engineer Field Manual*, Volume II, Part Two, page 98), weighing 10 lbs. each. Additional mines require additional transportation. The following table shows the time element and number of mines required to prepare an antitank mine obstacle:

To prepare one row of antitank mines, 500 yards long, one mine every four feet:

Concealment	Transportation and Personnel	Mines	Time
Mines camouflaged but not buried	One truck (carrying mines) and crew	375	1 hour
Mines buried	Same (larger crew)	Same	4 hours

An antitank obstacle should preferably include 3 rows of mines, staggered. Each 1000 yards of such an obstacle can be prepared, therefore, with mines camouflaged but not buried, in 1 hour, using 6 trucks and 2250 mines. If mines are buried, the same work requires 4 hours and more men than the troop can furnish.

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i. *Road-blocks*.—Roads may be blocked by:

- (1) Explosives (see above).
- (2) Trees.

(3) *Wire*.—Ribard cylinders or concertina wire (*Engineer Field Manual*, 1932, Volume II, Part Two, pages 88-89); carried collapsed; weighs $1\frac{1}{4}$ lbs. per yard. Wire cable: weighs .9 lb. per foot. Such wire, if carried, requires additional transportation.

Tactical Principles and Decisions—Mechanized Brigade in Attack

[Memorandum of 10 April, 1934]

Paragraphs

SECTION I.—Situation and Requirement.....	1-2
II.—A Solution.....	3

SECTION I

Situation and Requirement

Paragraph

Situation.....	1
Requirement.....	2

1. **SITUATION**.—The 951st Cavalry Brigade (Mechanized) is organized in accordance with the data issued [see *Reference Data*, C. & G.S.S., 1933, page 42, Table 50, and *Special Reference Data on Cavalry (Mechanized)*]. See page 133.

2. **REQUIREMENT**.—Using the outline, given hereinafter, as a guide in making the analysis required, answer the following questions:

a. *Basic principles and methods*.—(1) What is the *basic principle* which governs the employment of any weapon (or of *any* unit of combat power)?

(2) What is a general *method*, based on this principle, for obtaining the best effect from any unit or weapon, considering that unit or weapon by itself alone?

(3) Is it always *possible* to use each available weapon in this manner? Is it always *desirable* to do so?

b. *Relative combat strength*.—What is the relative combat strength of the Blue 951st Cavalry Brigade (Mechanized), fresh and at full strength, as compared to the Red 1st Division, also fresh and at full strength?

c. *Plans open to mechanized forces (suitable missions)*.—(1) Putting yourself in the position of the high command, what do you consider are the missions on which the 951st Cavalry Brigade (Mechanized) may be employed? [List them with reference to the basic methods of war: namely: fending, finding, fixing, fighting (striking), following, and finishing].

(2) From the viewpoint of the mechanized-force commander, what missions are *least* desirable? (A general statement, emphasizing what factor makes them so.)

(3) What missions are *most* desirable? (A general statement, emphasizing what factor makes them so.)

(4) Which of the two methods of action, offensive or defensive, is preferable for the cavalry mechanized brigade?

d. *Objective*.—(1) As Brigadier General A, commanding the 951st Cavalry Brigade (Mechanized), what principles would you use in selecting your objective at *any* given time?

(2) Also, is it practicable for the high command to indicate to you precisely what objectives you should select: always? frequently? ever? (Give reasons.)

e. *Mass and movement*.—(1) What elements of your command [the 951st Cavalry Brigade (Mechanized)] would you use to *find* the enemy? Will a hostile mechanized force be relatively easy or difficult to find? Why?

(2) Will fixing a hostile mechanized force be relatively easy or difficult? Why?

(3) Will the tendency be for a mechanized attacker to develop against a mechanized defender, first, and then attack him, or to develop and attack as one operation on one order?

(4) Assuming that the objective of an attacking mechanized force is, in a given case, a hostile mechanized force, and that the attacker wishes to destroy the defender, what will be the guiding idea in the employment of the attacker's maneuvering (striking) force?

(5) In what kind of terrain will a mechanized force prefer to defend against a hostile mechanized force? What kind of terrain will the attacker prefer?

(6) Will the mechanized attacker prefer a penetration or an envelopment? Why?

(7) How wide can such an envelopment be?

(8) What factors will influence the size of the attacker's reserves?

f. Security.—(1) Will security be relatively more or less important when operating against a mechanized enemy (as compared to a non-mechanized enemy)?

(2) What is the most vulnerable element of the 951st Cavalry Brigade (Mechanized)? How would you protect it?

g. Control.—Do the characteristics of the cavalry mechanized brigade increase or decrease the difficulties of control?

h. Decision (general conclusion).—It is widely recognized nowadays that the defense (omitting consideration of mechanized elements on either side) is relatively stronger than the attack (in proportion to the comparative strength of the units involved), and that this tendency has been increasing for many years: Does the advent of mechanized forces tend to change this condition? If so, what changes, in general, may be expected?

NOTES

Analyze the cavalry brigade (mechanized) by use of the following outline:

1. Mission.—The thing aimed at; the result to be accomplished. State it here as received from higher authority, or as deduced from that source.

2. Opposing forces.

NOTE.—Consider, under a and b, all factors shown in the outline under paragraph 3, below, and state a conclusion, under c, as to relative combat strength.

a. Enemy forces.

b. Own forces.

c. Relative combat strength.

3. Enemy situation.

NOTE.—Based on your conclusion as to relative combat strength, list all possible plans open to the enemy, and test each by the following considerations:

BASIC PRINCIPLES OF WAR

Elements of War
(Considerations influencing the employment of combat power)

Basic Factors (arranged with reference to the elements of war)

Objective (the thing aimed at; a result to be accomplished; a mission in the mind and a location in space) depends on or varies with: { Effect desired
Results of failure
Means available { Mass Movement
Security

Academic Notes C. & G. S. S.

<i>Mass (intensity of combat power) (include neighboring and supporting troops) depends on or varies with:</i>	<table border="0"> <tr> <td>Mass in opposition</td><td>Number of active sources</td></tr> <tr> <td>Fire-power</td><td>Rate of fire Accuracy Range and trajectory Disabling power</td></tr> <tr> <td>Shock-power</td><td>Number of active sources Direction Momentum</td></tr> <tr> <td>Security</td><td></td></tr> </table>	Mass in opposition	Number of active sources	Fire-power	Rate of fire Accuracy Range and trajectory Disabling power	Shock-power	Number of active sources Direction Momentum	Security											
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Fire-power	Rate of fire Accuracy Range and trajectory Disabling power																		
Shock-power	Number of active sources Direction Momentum																		
Security																			
<i>Movement (changes of location) depends on or varies with:</i>	<table border="0"> <tr> <td>Objective (direction)</td><td></td></tr> <tr> <td>Mass (own and enemy's, including neighboring and supporting troops)</td><td></td></tr> <tr> <td>Capabilities</td><td>Speed Obstacle-crossing Supply</td></tr> <tr> <td>Security</td><td></td></tr> <tr> <td>Conditions of nature</td><td>Distance Obstacles Visibility</td></tr> </table>	Objective (direction)		Mass (own and enemy's, including neighboring and supporting troops)		Capabilities	Speed Obstacle-crossing Supply	Security		Conditions of nature	Distance Obstacles Visibility								
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Security																			
Conditions of nature	Distance Obstacles Visibility																		
<i>Security (protection) depends on or varies with:</i>	<table border="0"> <tr> <td>Mass (as above)</td><td></td></tr> <tr> <td>Vulnerability (human, animal, mechanical)</td><td>Distance</td></tr> <tr> <td>Conditions of nature</td><td>From fire Cover From observation (secrecy)</td></tr> <tr> <td>Unity of effort</td><td></td></tr> <tr> <td>Signal communication</td><td></td></tr> <tr> <td>Physical capabilities</td><td></td></tr> <tr> <td>Psychological condition</td><td>Training Morale Surprise and all other moral factors*</td></tr> <tr> <td>Enemy mass (as above)</td><td></td></tr> <tr> <td>Conditions of nature</td><td>Distance Obstacles Visibility</td></tr> </table>	Mass (as above)		Vulnerability (human, animal, mechanical)	Distance	Conditions of nature	From fire Cover From observation (secrecy)	Unity of effort		Signal communication		Physical capabilities		Psychological condition	Training Morale Surprise and all other moral factors*	Enemy mass (as above)		Conditions of nature	Distance Obstacles Visibility
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Psychological condition	Training Morale Surprise and all other moral factors*																		
Enemy mass (as above)																			
Conditions of nature	Distance Obstacles Visibility																		
<i>Control (regulation of all physical and moral factors; includes everything influencing physical and moral stability) depends on or varies with:</i>																			

*This includes the present attitude and past actions of the troops involved; the characteristics of commander and troops; and the knowledge either side may have of the other.

a. *Plans open to the enemy.*—State them.
 b. *Analyses of enemy plans.*—Test each plan by the outline given above.
 c. *Conclusion as to enemy action.*—Weigh the plans open to the enemy, to determine which has for him most advantages and fewest disadvantages. Give a definite conclusion according to a, b, or c, below, remembering that the conclusion is to be tested by two things: first and most important, *correctness*; second, *definiteness*.

- a. The enemy's intentions, if these can be deduced.
 b. The capabilities of the enemy (the several lines of action, or plans, open to him), including a priority of probability.
 c. The capabilities, without a priority.

4. *Own situation.*

NOTE.—List all plans open to you in view of your mission and the existing situation. Test each by the considerations listed in paragraph 3, above.

- a. *Plans open to you.*—State them.
 b. *Analyses of plans open to you.*—Test each plan by the outline given in paragraph 3 above. Weigh the plans to determine which has for you the greatest advantages and fewest disadvantages.

5. *Decision.*—State the plan to be adopted, briefly and clearly, including only the following vital elements applicable to the command as a whole: What is to be done, when, where, and how it is to be done; and why it is to be done.

2. Consider also, in making the analysis, the basic methods of war, as follows:

- Fending (security)
- Finding (reconnaissance)
- Fixing (immobilizing; "holding"; pinning)
- Fighting (striking)
- Following (pursuit)
- Finishing (exploitation; clinching victory)

SECTION II

A Solution

A solution of the requirement.....Paragraph
3

3. A SOLUTION OF THE REQUIREMENT.—*a. Basic principles and methods.*
—(1) The basic principle which governs the employment of any weapon (or of any unit of combat power) is: The effective employment of combat power (in any form) depends on (or varies with) the characteristics of the weapon (or unit) concerned, the characteristics of its target (or opponent), and the characteristics of the theater of action, all with reference to mass (intensity of combat power), movement, security, and control.

(2) Hence a general method for obtaining the best effect from any such weapon (or unit), considered by itself alone, is to use it in that locality which most favors its operations, and against a target (objective) least able to fight back, and most vulnerable to the weapon (or unit) concerned.

(3) It is not always possible nor is it always desirable to utilize any given weapon or unit in this way, because the situation of the entire command (or assembly of weapons) may be such as to make it desirable to use some particular weapon (or part of the command) in a manner *not* ideally suited to its characteristics, considered by itself alone, or even very unsuitable thereto.

b. Relative combat strength.—(1) To determine relative combat strength, a study must be made of *all* the basic factors influencing the objective, the means (mass, movement, and security), and control.

(2) The objective is omitted in this comparison, as the question is general.

(3) (a) Mass includes fire-power and shock-power.

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(b) The effective sources of fire-power of the mechanized cavalry brigade and of the infantry division may be compared as follows:

<i>Weapons</i>	<i>Mechanized Brigade</i>	<i>Division (Normal Reinforcements)</i>
Rifles.....	126	4224
Automatic rifles and submachine guns.....	216	648
Machine guns:		
Caliber-.30.....	496	168
Caliber-.50 (ground).....	216	
Cannons:		
37-mm. infantry guns, or 1.85 (which is about x 45-mm.).....	36	24
75-mm.....	12	48
155-mm.....		24
Chemical mortars.....	8	8
Armored cars.....	34	4
Combat cars (including command cars) or tanks.....	190	15
ERP*.....	14,798	8,904

*NOTE.—“Effective rifle power,” considering effective weapons only (all those of the mechanized brigade are effective), on the basis:

1 rifle = 1
1 automatic rifle or submachine gun = 2
1 machine gun (caliber-.30 or .50) = 20

The mechanized brigade has $1\frac{1}{2}$ times the effective rifle power of the infantry division; it is slightly superior even if caliber-.50 machine guns are omitted. It is much weaker in number of artillery pieces, but not necessarily in effective artillery fire-power, because of its mobility.

On the passive defense (its least advantageous type of action) it can defend very strongly on a comparatively broad front, by reason of its caliber-.30 machine guns; its 2500 men, dismounted, have a much greater defensive fire-power than the 3100 of our infantry regiment.

(c) Its shock-power (the outstanding quality of the tank) is very great, as it includes almost 200 fast tanks (combat cars).

(d) It is highly mobile on favorable terrain, and its 36 self-propelled 1.85-inch guns can afford it a very powerful close support. It can move its gun and machine-gun fire-power and its shock-power with great rapidity from objective to objective, thus frequently necessitating an all-around defense on the part of the enemy.

(e) Its speed gives it great security (aside from its armor), as its units present fleeting targets. Its worst enemies are “untankable” ground and hostile guns (caliber-.50 and over). It is therefore not very vulnerable, in open situations, to hostile artillery of relatively low mobility.

(4) (a) Therefore the cavalry mechanized brigade is no mean opponent for the infantry division when operating on practicable terrain.

(b) The cavalry mechanized brigade is comparable to the British tank brigade, which has been tested frequently in maneuvers.

(c) To show the celerity of such a fast tank force, one battalion of the (British) Royal Tank Brigade was suddenly called upon, in the maneuvers of 1932, to interrupt the march of a reinforcing infantry brigade, so as to prevent it tilting the scale of battle. When the call came, the tanks were under cover, five miles distant from the enemy column. The latter had a less distance to go before it could arrive on the field of battle. But it did not arrive. In a short space of time the tank battalion was on the move, already preceded by a patrol of light fast tanks reconnoitering for

the head of the enemy column. In about twenty minutes the head of the column was fired upon by the leading tank company. In another fifteen minutes the column had been completely dealt with, when a report was received that hostile tanks were hastening to the rescue. Within ten minutes the whole tank battalion re-formed, and was ready to tackle the new opponent.

(d) In another exercise the entire Tank Brigade was used as an army's strategic arm of maneuver. It circled around the flank of a hostile army, with the aim of turning the army's retreat into a rout. At daylight the brigade was in a concealed location eleven miles distant from the road on which the nearest columns were retreating. The distance would have been nearly a day's march for an ordinary force. After the issuance of orders, a light battalion moved off, followed by three mixed battalions. Within twenty-five minutes the light battalion had advanced over seven miles. Upon making contact with the enemy's marching column, a stream of messages reached the tank-brigade commander in rear, giving the location, not only of the head and tail of the column, but of its battery positions and antitank weapons. Orders were given for two battalions to attack the forepart and hindpart respectively of the column, one light company having been sent off ten minutes earlier to block the head. One half an hour later a third battalion, followed by two light tank companies, was launched between the two battalions, and completed the enemy's demoralization.

(e) In still another maneuver the entire Tank Brigade was again used. In this exercise the general idea was that the small army to which the Tank Brigade was ultimately attached had been compelled to retreat, in order to gain time until the mobilization of their forces was complete. The stronger army had pressed on, and was menacing the capitol of the small army. Mobilization of some forces having been completed, and the Tank Brigade having been made available, the advance of the enemy was brought to a halt and the counter-offensive was assumed. To coincide with the offensive, the Tank Brigade executed a long-range maneuver wide around the flank of the hostile army, against its communications, and covered nearly fifty miles. By afternoon it was astride the enemy's rear, cutting communications and lines of retreat.

This exercise was cited as an excellent example of a move that would have been decisive in 1914 in turning the flank of the German right wing, a maneuver which, in the exercises, was begun and completed in a single day.

(f) It is worthy of note here that the Tank Brigade referred to, although not complete with the latest machines, embodied a fire-power, in guns and machine guns, greater than a division of nearly 20,000 men. That fire-power is, for practical effect, multiplied by armor and speed. Yet it could be assembled in a time incomparably small as compared with an infantry division, and this tremendous fire-power was wielded and the brigade maneuvered by hardly more than six hundred (600) men.*

c. *Plans open to mechanized forces (suitable missions).*—(1) The cavalry brigade (mechanized) may be utilized on those missions historically typical of cavalry:

To find (reconnoiter).

To fend—that is, to protect or cover:

An advance;
A retirement;
A flank.

To fix the enemy in place, by:

Seizing a locality and holding it for a given time;
Attacking the enemy.

**The Army Quarterly*, England, April, 1933, Volume XXVI, No. I.

Academic Notes C. & G. S. S.

To fight (that is, to *maneuver* and strike):

Against a flank;
Against the hostile rear.

To follow (*pursue*), either:

Directly, or as an encircling force.

To finish, or *exploit*; that is, to clinch victory; to complete it by:

Blocking lines of supply and movement;
Destroying supplies;
Delaying or destroying reserves.

(2) The *least* desirable missions, from the viewpoint of the mechanized-force commander, are those which most restrict its mobility, as in holding a small bridgehead to the last; or holding any restricted locality for a long time; or operating in very rough country, or in restricted defiles.

(3) The *most* desirable missions are those that involve large areas where the mechanized brigade will have freedom of movement: for example (on good terrain): covering an advance; covering a retirement; maneuvering against a flank and rear; striking at a sensitive spot.

(4) The mechanized force preferably employs offensive action, even when on the defensive. To immobilize itself into a set of stationary steel pillboxes, vulnerable to the hostile guns, is by all means to be avoided. It is better in such a case to send back the vehicles which can not be used, and to fight on foot.

d. *Objective*.—The selection of an objective for any force at any time involves two types of objectives: a mental objective, which is the mission; and an objective in space (a location).

(1) In selecting the objective in any given case, then, the following must be considered:

The effect we wish to produce; this involves:

The mission, and all its implications.

The operations of other friendly troops.

The probable results of failure.

The means available (in other words: considering all the basic factors in the situation, has the plan which involves this objective a reasonable chance of success?)

(2) It is *not* often practicable for the high command to indicate precisely to a mechanized-force commander what objectives should be selected, because the proper objective may vary from hour to hour, depending on the relative influence of all the basic factors of the situation (which are shown in the outline issued). A variation in the value of *any one* of these factors may change the objective *entirely*. For example, a variation in the strength of one hostile force as compared to another or as compared to our own; in the nature of the ground; in the weather; in the supply situation; in moral factors. Consequently, any maxim such as that the objective is always the enemy's main force, or one of his detachments, or a defile, or a supply establishment (as the enemy's gasoline and oil supply), or a supply line, or a control center, or any other particular thing—such maxims include valuable suggestions as to methods, but, followed blindly, can only lead us astray. The objective may be any of these, or it may be something else.

e. *Mass and movement*.—(1) To find the enemy, the cavalry brigade (mechanized) utilizes its aviation, and its armored cars, backed up, where necessary, by the scout troops (combat cars). A mechanized force is relatively difficult to discover; and, once discovered, difficult to "track," because it can shift position a long distance in a short time; therefore low visibility (fog, rain, darkness) will decidedly favor mechanized forces in their effort to secure secrecy.

(2) Mechanized forces are difficult to fix, as compared to forces of lower mobility, because of their ability to refuse combat and to move rapidly away.

(3) For this reason, the tendency will be for a mechanized attacker to develop, first, endeavoring to "stop the holes" whereby the mechanized defender may escape, and thereafter to attack. The attacker can not launch his attack until he has a certain minimum of information, for otherwise he may strike a blow in the air. The defender can shift his position rapidly, and this tends to increase the attacker's difficulties as to reconnaissance. In attacking a mechanized force, the objective must often be the hostile force itself, wherever it may go, because the defender can move so quickly that a terrain objective may lose its significance before the attack gets home. When a hostile force can quickly shift its position, in such a manner as to materially affect the form of attack, the result will be to force the attacker to:

Develop first, reconnoitering, "stopping the holes," and definitely finding the enemy.

And then, having *found* him and *fixed* him well enough to insure that the attacker can *fight* him (strike him), to launch the attack on a later order, preferably a mere signal.

These facts put a premium on flexible dispositions, and on well-understood alternative attack plans, which can be put into effect on a moment's notice while the development is proceeding, and as soon as sufficient information has been obtained to insure that the attack shall not be a blow in the air.

(4) Assuming that the objective in a given case is the hostile mechanized force, and that the attacker wishes to destroy this force, the guiding idea in the employment of the attacker's maneuvering striking-force will be to deprive the enemy of his mobility, either by taking away from him his gasoline and oil supply, or by penning him against an obstacle where he can be immobilized and destroyed.

(5) A defending mechanized force will prefer terrain that makes it difficult for the attacker to *get at* the defender, and yet leaves the defender numerous "holes" out of which he can "bolt." The attacker, on the other hand, will prefer terrain where obstacles restrict the movement of the defender, but where the attacker has available practicable routes of approach whereby he can bring his superiority to bear rapidly, maneuvering the defender against an obstacle where he can be penned and destroyed. Such an obstacle, from the attacker's viewpoint, should afford *no egress*; a river (or a mountain) which affords sufficiently numerous crossings (or passes) to permit the defender to escape in the time available is therefore defective from the attacker's point of view. (Again, the dominant factors are those relating to movement; mobility equals speed plus obstacle-crossing ability, divided by distance, obstacles, and visibility.)

(6) The mechanized attacker will seek opportunities to envelop, but he is capable of a swift penetration through wire, across trenches, and into a defender's rear area, unless halted by slopes, water, unfavorable soil, thick woods, or hostile gun-power. Moreover, the purpose of penetrations is basically to *create flanks* which can thereafter be attacked, and a penetration against a widely-dispersed defense is quickly converted into an envelopment. The mechanized force may often penetrate.

(7) No one basic factor will necessarily determine how wide an envelopment can be. The following must be considered:

Comparative mass: can the enemy defeat the fixing force before the fighting (striking) force completes its maneuver and strikes home? Or can the enemy *fix* the attacker's "fixer" and defeat the attacker's "striker"?

Comparative powers of movement: can the enemy move in time to defeat the attack in detail as above? Can he *escape* before our maneuvering striking-force gets around?

Security: Are both the attacker's fixer and striker sufficiently *secure* (as outlined above)? Perhaps the fixing-force guards an obstacle which

in turn *protects* it. Or an obstacle may protect the enemy, and so force a wide maneuver. (Or it may force a close-in maneuver.)

Control: can the wide maneuver be controlled by signal communication (radio, motor messengers, airplanes)? If the defender's morale or training is defective, the attacker can take greater liberties with him. Or low visibility may favor the attack as to secrecy, which may be utilized to obtain surprise.

Therefore it is necessary in each situation to check *all the basic factors*, weigh their comparative values, and adopt the course that has *most advantages and fewest disadvantages*. In a given case no one factor may be dominant. In another situation, one single factor may outweigh all the others. One case may vary from another only as to a changed value of one factor, and yet the best solutions may differ radically in the two cases.

(8) (a) The following factors will influence the size of reserves:

A relatively *strong* enemy requires on our part a relatively large fixing force; hence less force will be left to strike and to hold in reserve.

A relatively *mobile* enemy implies a relatively large reserve.

A relatively *vulnerable* enemy implies a relatively small reserve. If our flanks are secure, the reserve (other things being equal) may be relatively small.

Relatively good *control* implies a relatively small reserve.

(b) All of the basic factors must be weighed in estimating the situation, and each must be compared to the others before determining which govern(s).

f. Security.—(1) Security becomes relatively more important when opposed to a mechanized enemy, because it is necessary to be prepared for an all-around defense.

(2) The most vulnerable element in the cavalry brigade (mechanized) is the trains. Moreover, they carry the gasoline and oil (source of mobility). They should be left behind in security when practicable; when present, they must be protected by the combat vehicles en route, and, at a halt, will usually be parked with all-around defense.

g. Control.—It does not appear that mechanized forces will be materially (if at all) more difficult to control than non-mechanized. Improved signal-communication agencies, and the ability to install such agencies in nearly every vehicle, offset difficulties due to increased speed.

h. Decision (general conclusion).—(1) The advent of mechanized forces, until such time as antitank defense catches up with attack, will tend to readjust the balance between attack and defense. Whereas, under present conditions, stabilization is inevitable (and quick to come) wherever the given force finds its advance blocked and its flanks even *temporarily* secure; the presence of mechanized forces tends to discourage stabilization, because it takes more time and means to stabilize effectively against them.

(2) Mechanization does not necessarily, however, put the defender at a serious disadvantage. The possibilities of a highly mobile and flexible defense will still render the mechanized defender, in proportion to his mass, comparatively superior to the mechanized attacker; this is due to the fact that the mechanized defender is difficult to *find*, difficult to *fix*, difficult to *strike at*, difficult to *send off*, difficult to *follow*, and difficult to *finish*.

(3) For these reasons the balance now swings toward a war of quick movement, of flexible disposition (of mass), with increased emphasis on security, but with no greatly increased problems of control.

(4) Strategems, feints, ruses, and all the wiles of war come into their own in the operations of a unit of such mobility. The fact that so often the mere existence of a mechanized force on or near the field of action is a deadly threat, will frequently result in such a force deliberately avoiding combat, and maneuvering off into the open, irresistibly tolling its enemy after it and thus away from his objective. We probably shall see, in the future, all the old-time strategy of the "war of maneuver," in a new and quickened form.

(5) Such a type of warfare puts a premium on the power of *rapid and accurate decision*. The typical missions of the mechanized cavalry brigade may involve such quick and radical changes in the appropriate objectives as to make it impracticable for the high command to prescribe its action further than in terms of a simple basic mission. The mechanized-brigade commander, although his action will be coordinated with that of other elements of the command, is typically an independent or semi-independent commander. His action must be predicated on a clear comprehension of the basic principles of war and on an almost instinctive facility at formulating, with these principles as a guide, the best detailed methods to meet each situation.

**Combat Intelligence—Changes in Texts for Instructional Purposes,
1934-1935**

[Memorandum of 31 May, 1934]

The following changes in texts are published for instructional purposes at this school during the 1934-1935 course:

I. A MANUAL FOR COMMANDERS OF LARGE UNITS.

No changes required.

II. STAFF OFFICERS' FIELD MANUAL, Part I.

Paragraph 17—The military intelligence section.—*Change* second and third sentences to read:

* * * It is charged, in general, with the collection, evaluation, interpretation, and dissemination of information concerning the enemy. Its primary function is to keep the commander and all others concerned informed regarding the enemy's situation and capabilities. * * *

Paragraph 17 a (9).—Omit:

"(GHQ only)"

Paragraph 27 b (3).—*Change* to read as follows:

(3) *Enemy capabilities*.—He considers fully all possible lines of action, within the physical capabilities of the enemy, which can adversely affect the accomplishment of his own mission. He determines such possible lines of action by consideration of time, space, terrain, dispositions, and all factors pertaining to relative combat strength. He will seldom be justified in arriving at a positive conclusion that the enemy intends to adopt a particular line of action, but, if operations have developed sufficiently in point of time, verified information as to the enemy's movements and dispositions may warrant a conclusion that a particular line of action is *more probable* than other possibilities. Even in this case, however, no possible line of action should be eliminated from further consideration until verified information proves conclusively that the action in question is no longer a physical possibility.

Paragraph 29 a (3) (b) (page 31).—*Omit* the word "and" at the beginning of the last line, change the period to a comma, and *add* the words "and essential elements of enemy information."

Paragraph 38 (pages 45 and 46)—A form for an *ESTIMATE OF THE SITUATION*.—*Change* paragraph 3 to read as follows:

3. *POSSIBLE LINES OF ACTION*.—a. *Own forces*.—State, in general terms only, all lines of action open to you which, if successful, will accomplish your mission or facilitate its accomplishment.

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b. *Enemy forces*.—State, in general terms only, all possible lines of action, within the physical capabilities of the enemy, which can adversely affect the accomplishment of your own mission.

Change paragraph 4 to read as follows:

4. ANALYSIS AND COMPARISON OF OPPOSING LINES OF ACTION.

a. *Enemy lines of action*.—Determine the probable effect of the execution of each of the lines of action open to the enemy on the execution of each of the lines of action open to you. This will generally require the following with respect to each of the possible lines of enemy action:

(1) Analysis of the principal factors involved in the execution of this line of action, such as: necessary changes in troop dispositions; the time required for such changes; influence of the terrain; influence of the weather; influence of routes of communication on troop movements, evacuation, and supply; influence of all factors pertaining to relative combat strength.

(2) Consideration of necessary action by your own forces to guard against the enemy's action, and of the time required therefor.

b. *Own lines of action*.—With respect to each of the lines of action open to you, determine its practicability and weigh its advantages and disadvantages. This will require full consideration of your mission, the existing strategical or tactical situation, the probable effect of the execution of each line of action open to the enemy (as previously determined), and factors of the nature stated in paragraph 3 a (1). As a result, determine which line of action is most advantageous for carrying out your mission regardless of *any* action that may be taken by the enemy.

Change paragraph 5 to read as follows (thus conforming to instructions already published in mimeograph dated 17 April, 1934):

5. DECISION.—State the commander's *basic decision* which is reached as a result of the analyses and comparisons of all of the elements of the estimate made above. This statement is brief and covers in concise and definite terms what the command as a whole is to do to meet the immediate situation, and in general terms where the operation is to be carried out.

Paragraph 40 (page 129, S.O.F.M.)—A form for G-2 OR S-2 PERIODIC REPORT.—*Change paragraph 8 to read as follows:*

8. CONCLUSIONS.—a. *Enemy capabilities*.—State, in general terms only, all possible lines of action, within the physical capabilities of the enemy, which can adversely affect the action of the command.

(In subsequent reports, indicate only changes from previous reports.)

b. *Most probable enemy action*.—To be stated only when clearly indicated by verified information as to the enemy's movements and dispositions, and by the improbability of material change due to lack of time.

III. TRAINING REGULATIONS NO. 210-5.—*Combat Intelligence Regulations.*

Revision of these regulations as prepared by Major Haines in his Individual Research study.

IV. A STUDY OF COMBAT INTELLIGENCE, C. & G.S.S., 1930.

This document not being entirely in accord with the current teachings of the G-2 Section, will not be used during the 1934-1935 course.

V. FIELD SERVICE REGULATIONS, U.S.A., 1923.

Paragraph 18, 9th line.—*Substitute "capabilities" for "probable intentions."*

Paragraph 116, 3d line.—*Substitute "search for information" for "research of information."*

Paragraph 118, 9th line.—*Substitute "capabilities" for "intentions."*

Paragraph 120.—*Change to read as follows:*

The necessary orientation to the search for information is given by the commander through the designation of the essential elements of enemy information which indicate the points of greatest importance to the execution of the commander's plan of operations and to the security of the command. Subordinate units are informed as to the designated essential elements, and as to their specific reconnaissance missions as derived therefrom.

Each unit commander, in his own zone of operations, directs the search for information in accordance with instructions received, and in addition independently carries out such investigations as are dictated by his special situation or required for the execution of the operation in which he is engaged.

Paragraph 121, 3d line.—*Substitute "sections of the staffs" for "agencies."*

Paragraph 121, last two lines.—*Substitute for "and frequently furnishes the best indications of his intentions" the words "from which his capabilities can generally be determined."*

Paragraph 507, 11th, 13th, and 14th lines.—In three places substitute "possible" for "the probable."

Paragraph 507, 18th line.—*Substitute "enemy's capabilities" for "point where the main attack is to be expected."*

Paragraph 508, 2d Subparagraph on page 104.—*Change to read as follows:*

"The various directions from which the main attack may be launched chiefly determines the location of the reserve."

Paragraph 541, 2d and 3d lines.—*Substitute "enemy action" for "the enemy's intentions."*

APPENDIX I—FORMS FOR FIELD AND ADMINISTRATIVE ORDERS AND MARCH TABLE.

Do not use these forms. Use instead the forms shown in the *Staff Officers' Field Manual*.

Textbooks

[Bulletin No. 1, 15 August, 1934]

The following list of Command and General Staff School textbooks will be used by students during the 1934-1935 course:

The Solution of Map Problems, 1925 (Reprint 1926)

General Tactical Functions of Larger Units, 1927

Reference Data, 1934

Tables of Organization, 1932

Tactics and Technique of Engineers, 1929, except Chapters III and IV, which are 1932 edition

Tactics and Technique of the Quartermaster Corps, Chapter I, 1931 edition, Chapter II, 1930 edition, and Chapters III and IV, 1933 edition

A Study on Combat Intelligence, 1930

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Command, Staff, and Logistics, Chapter I (1934), II (1934), III (1934), IV (1934), V (1930), VI (1934), VII (1934), VIII (1934), XIII (1931)

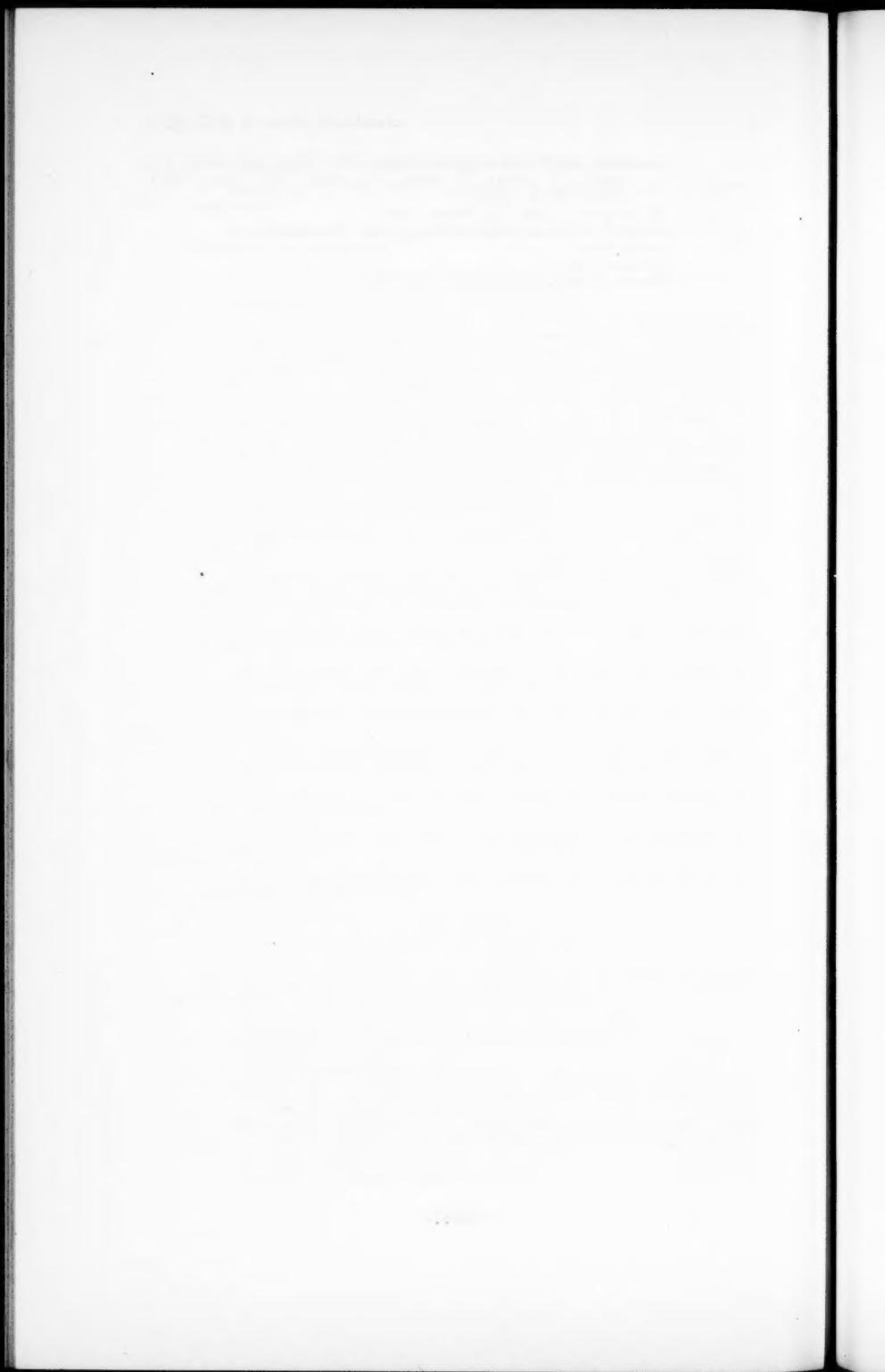
Military Aid to the Civil Power, 1925

Manual for Commanders of Large Units, Volume II

Attack, 1934

Defense, 1934

Reconnaissance, Security, Marches, 1934.



Section 6

BOOK REVIEWS

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Allen, Hervey.—**Toward the Flame.** A war diary. 1934—282 pages. M 9403-B4.73

CONTENTS: Preface; Preface to this edition; Route marching; Behind the front; In the valley of the shadow; The march to Château-Thierry; A day at Château-Thierry; On the edge of the battle; German dugouts; Courpoil; An air battle; A rest in the woods; A grave in the woods; Another night march; The march to the Vesle, and Fismes; Into the pit; A wild day; Over the bridge; Over the river again; Last hours in Fismette; Addenda.

Reviewed by Major E.S. Johnston, Infantry

By the author of *Anthony Adverse*. Experiences of an American infantry lieutenant in the Aisne-Marne Offensive of 1918. Written soon after the actual events; first published in 1925; and republished in 1933. This is probably at once the most sincere personal account, uncolored by propaganda and unrealistic drama, and the best literary effort, contributed by an American to the story of our World War experience. The author appears to have been a dutiful company officer. He writes with a restraint which marks the due distinction between realism and vulgarity. Occasional passages, to be sure, stress those aspects of war experience, which, while soldiers carry them long in memory, they seldom wish to put into the spoken word, and least of all care to commit to paper. The author, being evidently a highly-organized human being, of poetic tendencies, might be expected to be especially affected by those repulsions which in their more extreme forms figure in the psychiatric literature of war, and which actually furnish most cases of "shell-shock." These disgusts, aroused by certain sights and sounds of battle, probably exercise more influence than physical fear. The author informs us, in fact, that he originally wrote down his recollections, in order to rid his mind of harrowing memories.

Mr. Allen's organization appears to have experienced rather more than its share of meals postponed or lost because of poor coordination of marches, of intense false gas alarms, and of needless fatigue and losses due to poor tactical handling, incidents which, by the way, emphasize the gratitude owed to our seniors by those of us who served under competent battalion commanders. The author accords to the presumed military schooling of his immediate seniors an innocent respect apparently by no

means their due; and he appears, somehow, to attribute their very evident short-comings to a lack of common-sense in military education generally. This same naïveté leads him to denounce all musketry training as "murderous," because it appears that the musketry with which he was familiar insisted on a fire-fight in rigid lines not adapted to the realities of the battle-field.

In less technical realms, however, he evidences a true estimate of factors often misunderstood, such as the practical folly of any system of training which seeks to imbue the soldier with a blind hate for the enemy, rather than a calculating and wary appreciation of the foe's capabilities and limitations. It is, of course, a fact that the practice of giving no quarter merely increases the desperation of the hostile resistance, and that, "especially toward the last of the struggle, respect, and even a certain friendliness and mutual pity, animated all concerned in the common misery."

That all combat officers hoped to be sent home to train troops, thus gaining promotion and a reprieve from the imminence of death, and that nearly all, however sickened by dread and disgust, nevertheless performed their full duty with determination, dignity, and consideration for others,—this is a truer picture of the psychology of war than the conventional peace-time picture of what a proper soldierly attitude should be; and however often and truly portrayed in such reminiscences of war, this fact can not be too often repeated for the benefit of soldiers of the future. The young officer who enters war under the impression that fear and repulsion are ignoble, may find his confidence in his own powers much impaired when his peace-fostered illusions are shattered. Better by far to teach him beforehand that to be brave means to be physically, emotionally, and mentally sickened, but nevertheless to carry on.

That we were ill-prepared to meet the strain on that last link in Class I supply—from the kitchen to the soldier—is another practical lesson to be drawn from a reading of this book; whether we are better prepared now is a question.

The book contains a typographical error attributing to the 39th Infantry the defense put up by the 38th Infantry on the Marne. The reference to the Austrian 77, also, must surely be a misreading for the Austrian 88.

The book closes with the desperate defense of Fismettes, on the Vesle, in which the garrison was sacrificed, over the protest of General Bullard (American III Corps), in the effort, ordered by the (French) army commander, to maintain the narrow bridgehead which had been gained there.

This book is of interest to all officers, and especially to the G-2 Section of this School as to the course in Leadership.

Ashford, Colonel Bailey K.—**A Soldier in Science.** The autobiography of Bailey K. Ashford. 1934—425 pages.....M 973-B92

CONTENTS: Foreword, by Major General M.W. Ireland; Arms and the microscope; The second campaign; Reconnaissance of Brazil; The Buccaneers of Langres: 1917-1918; No truce in the tropics; Author's note; Index.

Reviewed by Lieutenant Colonel R.C. Heflebower, Medical Corps ..

Simply, earnestly, and convincingly, Colonel Ashford relates the story of his experiences as a soldier and scientist. Interesting indeed is the recital of his experiences as an officer of the Medical Corps of the United States Army during the war with Spain and in the World War. But far more interesting, in fact fascinating, is the tale of his part in the war against those invisible foes, which in peace as well as war, sap the strength of virile manhood, cause untold suffering and misery, and bring death to countless thousands.

Sent to Puerto Rico with General Miles' expedition, he served through that short campaign with the troops, and was then ordered to command the General Hospital at Ponce. Then came the great hurricane which left devastation, hunger, suffering, and epidemic disease in its wake. A Field

Book Reviews

Hospital was opened to care for the native victims of the disaster, "and into it streamed waxlike specters who had stumbled wearily in from the mountains." Once more, Colonel Ashford was struck by the "flabby flesh and ghastly pallor" which he had previously noted. The natives called it "anemia—the natural death." Some said that it was due to malnutrition—from which a large part of the population suffered; others, that it was the unavoidable concomitant of life in the tropics. The disease had existed for years and had defied deciphering. Colonel Ashford accepted the challenge. He studied the blood of the victims under the microscope, and found that it was anemia right enough. But, queried the scientist, could anemia affect an entire population? Colonel Ashford thought not, and decided that the basic fault might lie outside of the blood, and began to look elsewhere. Finally, his persistence was rewarded. In the faces of the sufferers he found the eggs of the *Ancylostomum Duodenale*—the hookworm which had been recognized as the cause of the anemia found in Italian laborers engaged in digging the St. Gothard Tunnel in Switzerland. And then began the campaign to cure the victims and to prevent the disease, a campaign which was beset with opposition and numerous vicissitudes, but which, largely through the persistence, personality and devotion to a worthy cause of Colonel Ashford, finally ended in triumph. By 1908, the deaths from anemia had been reduced from 12,000 to 1,758 a year. It is not difficult to imagine the thrill that was Colonel Ashford's, when at the International Congress on Industrial Hygiene in Brussels in 1910, after hearing a European doctor report "a record of 30,000 miners treated for hookworm disease at a cost of only \$2.00 per man," he announced that in six years of the campaign in Puerto Rico, they had cured 300,000 cases at a cost of between 50 and 60 cents per individual.

The fruits of Ashford's labors were not destined to be confined to our young dependency in the West Indies. The Rockefeller Sanitary Commission sent its representatives to investigate his work in Puerto Rico, and out of this visit came the great work for the eradication of hookworm in our Southern States. In 1910, the same organization sent Ashford to Brazil as a member of a commission to study tropical diseases there.

When the United States entered the World War, Colonel Ashford was sent to France, and soon was assigned the task of organizing and conducting a school for the training of medical officers of our Army. As conceived by him, the purpose was to acquaint its students "by actual demonstration and participation, with every phase of war from front to rear." The account of his visits to all parts of the Western Front can be but of intense interest to the reader. His experiences are so delightfully and picturesquely related that they will recall many memories to those who were privileged to participate at the front, and vividly portray the conditions there for the benefit of those who were not there.

Since the World War, Colonel Ashford has seen another dream come true, and largely due to his efforts there has been organized in Puerto Rico a School of Tropical Medicine, which is housed in a beautiful building in San Juan. This school has distinguished itself by its cures of numbers of cases of disease, and as a result of its researches has made scientific contributions of inestimable value to the world's medical knowledge.

In recent years, Colonel Ashford has turned his attention to the study of the disease known as "tropical spru." While he does not insist that the case is absolutely proven, he believes that the cause is a combination of a faulty diet and the presence of another parasite, *Monilia Albicans*. The association of this parasite with the disease is Ashford's discovery.

This story of Colonel Ashford's contribution to civilization is well worth reading by military man, doctor, and layman. Those parts of the story which have to do with scientific facts are so clearly and simply expounded that they can be easily understood by all. The military man can but be interested in the story of how the doctor has been made "into a combatant military officer of as much value as any other officer in winning battles." The layman should be thrilled by the account of the struggles on

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that "Front which is still daily being pushed back into the infinite, horrible and splendid, whence come these problems of life and death."

Out of this autobiography there emerges a portrait of the straightforward, energetic, efficient, and persistent soldier and scientist that is Colonel Bailey K. Ashford. When the roll of the great heroes of the American Army has been completed, his name will stand near the top. Not only has he accomplished much, but during future ages his work will be a guide and an inspiration to those who give their lives to the fight against the ravages of disease.

Dahlin, Ebba.—**French and German public opinion on declared war aims, 1914-1918.** 1933—168 pages..... M 9403-C1-A

CONTENTS: Introduction; Days of decision and dogma (August-September, 1914); The era of indecision (October 1914 to December 9, 1915); The conflict of extremes (December 9, 1915, to January 10, 1917); The victory of the moderates (January 10, 1917, to November 1917); The defeat of conciliation (November 1917 to November 1918); Bibliography; Index.

Reviewed by Captain F. During, Infantry

The author of this study is quite aware of the difficulties in establishing what may fairly be called public opinion, and in measuring its qualities, changes, and influence. Carefully defining terms, and limiting the investigation to the public response to "declared war aims," she has made an illuminating comparison of the speeches and documents of government officials, the declarations of parties and their leaders, press editorials, the pronouncements of organized groups and special interests, and the writings or drawings of individuals; in fact, types of almost everything articulate have been examined. Perhaps because of the amount and nature of the material available, somewhat greater attention appears to have been devoted to German opinion than to French. Some chronological confusion occasionally arises as the account shifts from one country to the other, or reaches back to establish the setting of a particular development of opinion.

Beginning with the "days of decision and dogma" (August-September, 1914), when governments and peoples on both sides were emotionally united against the foe, passionately asserting the war to be in self-defense, proceeding through the "days of indecision" (to December, 1915), the author traces the appearance of doubts as to war aims—doubts within the circles of government and in public expression. Differences of purpose and expectations ultimately appear until, during 1916, there ensues a veritable civil war of conflicting opinion in each nation; as the war burdens become more severe, extremists and moderates clash over the terms to be imposed upon the enemy. In 1917, the moderates seem temporarily to prevail, in each country, and express remarkably similar war aims. The desire of both people, apparently, was for a "peace through right" or a peace of understanding. But the fortunes of arms, in 1918, exalted the military and the extremists; the "imperialistic and proud chancelleries" blocked the paths to such a peace by "lengthy clauses of never-ending treaties and the peoples of the two nations were prevented from fulfilling their desires." [Journal of Modern History, December 1933]

Foreman, Grant.—**Advancing the frontier 1830-1860.** 1933—363 pages..... M 973-Q1-A

CONTENTS: Preface; Immigrant Indians and their problems; The beginning of Fort Gibson; Sketches of a frontier garrison; Fort Wayne and Fort Towson; Fort Washita protects the Chickasaw immigrants; Indian hostilities; The Osage Indians; Peace council at Fort Gibson; Missionary activities; Hostile prairie Indians; Choctaw immigrants involved in Mexican disorders; Peace negotiations with Texas Indians; Attempt to form an Indian confederacy; Cherokee council of 1838; Indian international councils of 1842 and 1843; Creek negotiations with native Indians; Chickasaw harried by prairie Indians; Comanche Indians menace Fort Arbuckle; Indian customs; John Howard Payne describes the Cherokee Indians; Bibliography; Index.

Reviewed by Major C.A. Willoughby, Infantry

Eviction of the Indians from their homes east of the Mississippi River had been decreed. Forceful removal of the eastern tribes was sub-

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stantially accomplished during the decade between 1830 and 1840. More than 60,000 Indians were driven from the southern states and located in the future Oklahoma.

The Federal Government had no definite Indian policy. Expediency dictated its actions in the handling of this most difficult subject.

The Government had bound itself by treaties to protect the immigrant Indians against their wild neighbors, and tardy compliance was made by the erection of a number of frontier army posts after the immigrants had suffered greatly from depredations. Six forts were erected before the Civil War in the future Oklahoma. These posts constructed from time to time, distinctly marked the advance of the frontier that followed the retreating buffalo herds and the restriction of the hunting grounds of the prairie Indians.

These army posts and the influence of the immigrant Indians became involved with the interests of the white man as he adventured through the Indian country on his migrations to Texas, Santa Fé, and California. They aided the Government in its negotiations leading to important treaties with the wild Indians of the Southwest. The associations of these many factors and their influences, form a vital part of the history of this region and its people.

The source from which this book is written is in the main hitherto unpublished manuscript material in various Government archives in Washington.

Hindus, Maurice.—*The great offensive.* 1933—368 pages.....947-A

CONTENTS: Introduction; For a new economic order: Life, Machines, Village, Collectives; For a new human personality: Religion, Morality, Prostitution, Family, Schools, Art, Army, Jails, Man; For new adventures: Siberia, Revolution.

Reviewed by Captain F. During, Infantry

Maurice Hindus's book presents a sort of balance sheet of Soviet accomplishments and shortcomings as they stand at the conclusion of the first Five-Year Plan. Broadly speaking, he is of the opinion that economically the results have been disappointing; the standard of living, "in terms of material satisfactions," is lower than ever before. But it is along the line of sociological evolution that Mr. Hindus perceives a sharply ascending curve. He is convinced that the Soviet leaders have definitely succeeded in reconstructing the human personality. Russians today are not the sort of people that Russians were.

The details of Mr. Hindus's book are interesting. Perhaps the clearest way of reflecting his picture is to summarize the most striking of these:

There has been a slackening of tension. Night life has reappeared in Moscow; recreation out of doors is much in evidence.

The food problem remains acute.

In the basic industries of coal, pig iron, steel and rolled steel, production has slackened and the objectives sought have not been reached. On the other hand, Russia is manufacturing machines which she never made before, some of them in large quantities. Particularly is this true of agricultural machinery.

The party leaders have recognized the need for more tact and patience, for a greater degree of cooperation, in putting through the collective-farm program.

Mr. Hindus gives considerable space to the elaboration of his belief in the "reconstruction of human personality." "The new man" in Russia, he tells us, is definitely an atheist. He has lost all faith in God, all fear of God.

Mr. Hindus finds "the new man" equally transformed in his attitude toward sex. "If he is ever disturbed by a sex problem the cause invariably is physiological and not social or emotional."

"The new man" has also lost "all fear of parental authority, of family opinion, of family position."

Not the least interesting of Mr. Hindus's chapters concerns the status of world revolution. He believes that while faith in its inevitability is still an article in the Communist creed, "ardor for the movement" has perceptibly cooled. [New York Times Book Review, 12 November 1933]

Johnstone, William J.—**Robert E. Lee the Christian.** 1933—301 pages..... M 9737-E4-C.75-B92 (LE)

CONTENTS: Foreword; Christian lineage; Home training; Model youth and young man; A model soldier; Revered and loved; A Christian on the frontier; The great decision; God's will; The soul of Lee; God his helper; The heart of Lee; Sabbath observance; Unselfish nobleness; A kneeling Christian; Great in defeat; A Christian college president; The college chapel; Religious welfare of students; Financial temptation; The comforter; General Lee and Temperance; A man of prayer; An active churchman; General Lee and the Bible; The sunset; Testimony of associates; Tributes; His crowning grave; Sources of information; Where found; Names of the Deity; Notes; Lee Memorial Chapel; Abraham Lincoln was a Lee; Index.

Reviewed by Colonel T. Miller, Cavalry

This book depicts the spiritual life of the great military leader of the Confederacy from his boyhood days until his death in 1870 while serving as President of Washington College in Virginia (now Washington and Lee University).

The chronological order has been followed and throughout its two hundred and fifty pages the author has included in this book quotations from sixty books, magazines and papers, giving incidents, letters, orders of the army, etc., to show how constantly and continuously Lee was guided and sustained throughout his whole life by Divine grace and wisdom.

In his foreword the author says:

"No picture of Robert E. Lee could be complete that did not portray the religious side of his character. It was the basis upon which all else rested. It was the source of his strength, the law of his life, the guide for his every act, and the support upon which he leaned in every trial.

"His correspondence reveals him as a man who lived in the presence of God, who looked to God continually for guidance and strength, whose mind and heart were saturated with faith and trust in God.

"After years of study of the life and character of Robert Edward Lee, I fail to find in his whole career, from the cradle to the grave, a flaw in his relations to his family, his friends, his associates, or his enemies; in his conduct at home, in school, in the field, in the college, or in the church; and in his moral, social and religious character."

The book opens by pointing out the Christian lineage of Robert E. Lee and stating that such a character as his does not happen, but that it is the product of generations of Christian ancestry—that it is not altogether an individual accomplishment but that it is a family development.

The reader is then led through a series of interesting chapters in which the religious side of the life of Lee is most convincingly and impressively portrayed. An early chapter deals with his home training and his mother and the devotion of the boy to his mother is vividly described and a beautiful tribute is paid her in molding and influencing the character of the great man that was to follow.

The succeeding chapters reveal the great Christian character of this peerless military leader in his family life, throughout his military career and in the discharge of his civil duties. His military campaigns are not described but incidents and events during the Civil War are related to illustrate the effects they produced upon the mind of this great Christian leader.

In reading this book one would imagine that it was picturing the beautiful character of a minister of the Gospel rather than that of a layman. Indeed, Lee appears to have possessed all the qualifications for that high office. He is reported to have said to a group of professors at Washington College after the war: "The great mistake of my life was taking a military education."

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The following are some of the high lights disclosed in the pages of this pleasing book:

Lee was a consistent and devout member of the Episcopal Church.
He had implicit faith and trust in the Great Commander and never questioned Him.

He exhibited a complete resignation to the will of God and believed there was a Divine reason for everything.

His great devotion to children, particularly his own, revealed a very tender side of his Christian character.

By his references to the Deity in his orders to his troops he exercised a great influence over them.

He was profoundly interested in the religious welfare of his soldiers and later of his students at Washington College.

He prayed fervently for his loved ones and others committed to his charge, and for the cause which was so dear to his heart.

He manifested a great spirit of forgiveness of his enemies and inspired others to do likewise.

He possessed a deep and profound sense of honor and justice.

He was regarded by all who knew him well with the greatest veneration.

The Bible was his daily companion, his guide, his comfort, and his trust. He read his Bible every day wherever he happened to be.

He was guided and sustained by the Christian's faith and hope.

He is reported to have said: "The best thing in the world is to be a Christian gentleman."

His last act before the fatal stroke which took his life two weeks later was an attempt to say "grace" at supper in his home at Lexington, Virginia.

He had God in his heart which made him a leader unlike the famous captains of the ages. Alexander believed in himself, Caesar in his legions, Napoleon in his destiny, Lee in his God.

He died as he lived, calmly and quietly, in the full assurance of the Christian's faith, and with the brightest evidence that in passing over the river he has (with his great lieutenant, Stonewall Jackson) rested under the shade of the trees of paradise.

The religious phase of Lee's character may be summed up in three short sentences:

He trusted and loved God.

He loved his fellow men.

He believed in Jesus Christ as his Savior and Lord and manifested the Christian spirit towards enemies as well as friends.

The grandeur of Lee's character shines forth throughout every page of this book. One of the most beautiful parts of the book is to be found in the last chapters which include the testimony of his associates and many other tributes to his memory.

His nephew, Fitzhugh Lee, speaks of him as "a perfect and beautiful model of manhood. The profession of the soldier has been honored by his renown, the cause of education by his virtue, religion by his piety."

His son, Robert E. Lee, Jr., said: "His was a practical, every day religion, which supported him all through his life, enabled him to bear with equanimity every reverse of fortune, and to accept her gifts without undue elation."

Jefferson Davis paid the following tribute to General Lee: "This good citizen, this gallant soldier, this great general, this true patriot, had yet a higher praise than this or these—he was a true Christian. The Christianity that ennobled his life gives us the consolatory belief that he is happy beyond the grave."

Lee is pictured in this book as being as near perfection as any human being could be. "The crowning grace of this man, who was thus not only great but good, was the humility and trust in God which lay at the foun-

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tion of his character. His crowning glory was the sublime simplicity of his Christian faith and life."

The story told in this book is a striking illustration of the fact that there is nothing inconsistent in a great military commander being a great Christian leader.

No student of Lee should fail to read this book nor should any one interested in the subject of leadership overlook this important quality of character which has been so impressively demonstrated throughout these pages.

Lanrezac, General Charles, French Army.—**The French plan of campaign and the first month of the War (2 August-3 September 1914).** Translation from the French. 188 pages M 9403-J.44-A.44

CONTENTS: Preface; Introduction; Study of the campaign plan before the War; The concentration behind the Meuse from Mouzon to Mezieres (2-15 August); The reassembling of the Fifth Army near the Lower Sambre (16-19 August); 20 August; Condition of equipment and morale of the Fifth Army on 20 August; The Battle of Charleroi (21-23 August); The Battle of Guise (24-30 August); 30 August to 3 September; My departure from the Fifth Army; Footnotes.

Reviewed by Lieutenant Colonel E.N. Woodbury, C.A.C.

Without doubt General Lanrezac was the victim of circumstances beyond his control. This volume may be considered as his reply to criticism which resulted in his relief from command of the French Fifth Army. The volume is not recommended for the student of history who seeks only the truth—it is filled with good intentions which some way went wrong. It is interesting reading matter to the skeptical student of history who doubts that an army can become completely intermixed in its major units and, at the same time, succeed in its escape from a pursuing enemy at the average rate of march of over twenty miles per day; and, finally, after ten days of rout, be found intact for subsequent missions. Throughout the volume will be found statements of operation orders given and received. One marvels in reading these orders how armies and corps can operate on such terse and vague instructions.

Lindley, Ernest K.—**The Roosevelt Revolution: First phase.** 1933—328 pages..... 973-A

CONTENTS: Preface. Roots of the Revolution; The interregnum; The crisis; Good-by to gold; Upturn; The New Deal meets the Old World; The NRA; People in the White House; The official family; The Brain Trust; The next phase.

Reviewed by Captain F. During, Infantry

Mr. Lindley has produced a scholarly historical narrative which manages to retain the rush and impact of great events as they originally unfolded in the front-page headlines. As an exhaustive summary of legislation and administration and the forces behind them, from the bank holiday in March 1932 up to the latest phases of the NRA epos of last year, the book comes very close to being indispensable. [New York Times Book Review, 12 November 1933]

Monkhouse, Allan.—**Moscow, 1911-1933.** Being the memoirs of Allan Monkhouse. London, 1933—349 pages..... M 947-A

CONTENTS: Introduction; Russia, 1911-1914—Contrasts; Russia, 1911-1914—Industrial development; Early days of the War, 1914-1917; Revolution, 1917; Siberia; March-April, 1918; Summer, 1918; Archangel, 1918-1919; U.S.S.R. in 1924—Shatura; The Caucasus, May 1926; The new economic policy; Leningrad, 1927-1930; An election and the structure of the Soviet Government; The Five Year Plan; The Five Year Plan in industry; Agriculture and agrarian problems; Moscow, 1911-1933; British firms and the Five Year Plan; Transport and travel in the U.S.S.R.; A changing nation; The O.G.P.U.; "The Moscow arrests," March 11th, 1933; "The Moscow trial," April 12th-19th, 1933; Conclusion.

Reviewed by Captain F. During, Infantry

Mr. Monkhouse has done well not to confine his book to the Metropolitan-Vickers trial; for, even if he had never come before the public in

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the sensational role of a prisoner, he was fully entitled to do so as a writer on Russia.

His book really divides itself into three parts—his life in Russia before and during the War; his return to Russia in 1924, when he worked for nine years as an engineer in the service of Metropolitan-Vickers; his arrest and trial in the spring of 1933. During the early period he came into contact mainly with professional men and industrialists. Russian industries were still new and the industrial classes lived well themselves and cared little for their workmen, whose conditions of life shocked an Englishman coming from a country where social reforms already had history and tradition behind them. But, Mr. Monkhouse observes, if the workman was worse off under the old régime than he is now, it was not so with the peasant, who over a large part of Russia lived a moderately contented life. Then came the test of the war, from which, on the whole, the Russian middle classes did not emerge with credit; nor had they sufficient backbone to stand the still severer test of the Revolution. Mr. Monkhouse stayed on in Moscow until the early months of 1918, so long as it was possible for him to do any useful work. The description of his hazardous journey across Siberia to Vladivostok, thence to America and England, and finally to Archangel with the British Expeditionary Force, shows him a man of ready resource with an understanding of many types of humanity.

The collapse of Russia had been a bitter disappointment to him. Hence, when he returned in 1924 and found the zeal for reconstruction which had already begun as a result of the new economic policy, he threw himself heart and soul into the work. He gives full credit to the Soviet Government for their courage and vigor in trying to put the country on its feet again, and unstinted praise to the Russian engineers and other technicians, men of the stamp of Mr. Winter, who labored with an infectious enthusiasm. But, while ready to give praise where it is due, he does not hesitate to condemn the methods which have accompanied the progress of the Plan. He was in a position to see much deeper below the surface than most writers on Soviet Russia, and his analysis of the Five Year Plan as regards both industry and agriculture is well balanced throughout. The gist of his criticism is that the Soviet Government has put party affiliations before merit in allotting positions under the Plan and has been in too great a hurry. In so doing they have been tempted to use their unlimited powers to put a burden on the population which has proved intolerable. Owing to their fanatical desire to industrialize Russia and to favor the urban classes they destroyed the peasant industries, and then found that they were unable to provide the commodity goods that the peasants required in return for their corn. Instead of adapting the Plan to the peasants, they attempted to force the latter into the framework of a plan devised from above. This has not only led to a serious failure in the Plan, but has brought misery and famine to the greater portion of the population.

The crisis in the Five Year Plan which made itself felt by the beginning of 1933 leads directly to the famous Moscow Trial. Stalin's speech in January reviewing the progress of the Plan showed that the blame was to be laid not on the Soviet authorities but on counter-revolutionary wreckers. A super-plot had to be staged; and the most impressive plot was one against the leading activity of the Commissariat of Heavy Industries, the electric power supply. In this the Metropolitan-Vickers Company was directly concerned.

From the moment of the arrest Mr. Monkhouse's narrative enters into close detail. Every work is carefully weighed, and there is clearly no exaggeration in the account of his examination in prison and his living conditions there or in his further examination before the trial by M. Vishinski, the State Prosecutor. His description of the trial is equally clear and exact. It would be difficult for anybody after reading his analysis to maintain that the Soviet Courts, even when on their best behavior with

the whole world looking on, were anything but a travesty of justice. Mr. Monkhouse's famous declaration at the trial that the whole thing was a "frame-up" is abundantly justified by the evidence he produces. [London Times Literary Supplement, 9 November, 1933]

Nickerson, Hoffman.—**Can we limit war?** 1933—317 pages.....M 004-A

CONTENTS: Preface. Part I—War and the social order: The inevitability of war; The permanent limitations of war; The ancient cycle of war. Part II—The Christian cycle of war: The medieval limitation of war; The wars of religion; The eighteenth-century limitation; Democracy and mass massacre. Part III—Since 1918: Napoleon and twentieth-century disarmament; The future of fruitfulness; Disarmament, policy and politics; Will war destroy civilization? Part IV—Conclusion: Tanks, planes and limited war; Peace and order.

Reviewed by Major E.S. Johnston, Infantry

This book is the outstanding American contribution to the mounting tide of commentary on the shortcomings of the "conscript hordes of 1914-18 and of Neo-Napoleonic strategy." It deserves a place with Liddell Hart's *Ghosts of Napoleon* in the effort to unravel the tangled skein of Clausewitzian "logic" that culminated in the World War stalemate and the consequent present world-wide economic depression.

The author's thesis is a sane military pacifism, that wars can be limited and postponed, but, in the present state of things, not abolished; and that the sentimental propagandists as to abolition of war actually beclouds the issues, accentuates difficulties, and renders it more difficult to limit war.

The writer then shows that, at the other extreme, those who have taught unlimited or absolute war have also failed as to realism; the nation that sets no bounds to its ambition thereby ruins itself by breeding a system of hate and suspicion that eventually raises up overwhelming enemies against it.

War was very effectively limited, largely by the Church, in Medieval times. In the 17th Century the Thirty Years' War, following on the religious wars, disposed of three-fourths of the German population of Europe. Fully aware that such unlimited ferocity, if not restrained, implied the end of civilization, Europe, in the 18th Century, turned to a sort of limited-liability form of war, in which an effort was made to gain dynastic objectives with the least disturbance to normal living conditions.

The French Revolution, however, ushered in the period of Democracy, and coincidentally the conscript army. Entire populations, inflamed by passion fed on propaganda, were again involved; and in due course a new series of increasingly violent wars followed, progressively disturbing to the structure of international economic well-being. A special combination of military conservatism, Clausewitzian wizardry, and tactical paralysis made the World War peculiarly destructive. The machine gun rendered the defense supreme. Antidotes were developed only very slowly. In the meanwhile, the craze for fighting it out with masses against the enemy's masses piled up a total casualty list of twenty million soldiers.

The cult of absolute war is now under a cloud for various reasons: mainly, that its German exponents were badly beaten; that all countries dread air attacks (especially by gas); and that the World War developed an appreciation of realism, in most countries, to the effect that a war to the finish hardly justifies itself if it finishes the victor as well as the vanquished.

The author's account of recent arms conferences is especially interesting.

The author believes that the mechanization of war reduces the effectiveness of the mass armies of the World-War era, re-enthrones the professional soldier, opens up a new epoch wherein brains will again reign over brute force, and paves the way for re-establishment of war on the limited, 18th-Century basis. He reasserts the prophecy made immediately after the World War by R.M. Johnston, and since then by von Seeckt, that wars of the future will be waged by highly technical, professional, expert armies, comparatively small, very expert, and capable of gaining (or losing) a decision in a short time, with minimum dislocation of the

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essential fabric of modern industrialism. It will again be the highest test of generalship that success be gained without undue cost, in recognition of the principle that the loss justified for a given purpose is proportional to the benefits to be derived from that purpose. He points out that propaganda to limit or abolish modern weapons such as the tank, the bomber, and the more powerful types of cannon is not only based on a misconception of human possibilities, but, if successful, can not but extend the life of the horde-armies and of mass-butcherery, and thereby actually defeat the essential purposes of the pacifists who propose such action.

The book is of interest to all officers and to all sections of the School.

Powell, E. Alexander.—*Slanting lines of steel.* 1933—307 pages
..... M 9403-B4.73

CONTENTS: Death in the sun; Death in the dark; Crashing a battle; The war correspondents; Through the lines; The march to Armageddon; The coming of the British; The fall of Antwerp; "Deutschland, Deutschland über Alles"; "Vive La France!"; Shells; The fighting in Champagne; The retaking of Alsace; With the Italians; Fighting on the roof of Europe; Military intelligence; The Wild West Division; A.P.O. 714; The great adventure ends.

Reviewed by Captain F. During, Infantry

Until he took off the fancy togs of a correspondent and put on the uniform of a soldier, E. Alexander Powell had quite a glamorous war record. As a preparation for the big show which began in 1914, a performance he says he had prophesied with "remarkable accuracy" in 1909, he regaled his "millions of readers" with accounts of the relatively minor doings through the Cuban, Philippine, South African, and Manchurian campaigns.

Mr. Powell went to Belgium. It seems he sensed that the Lowland Kingdom would afford him an opportunity to be between the opposing armies, rather than stuck behind one of them. Also, he had figured it out that the censorship would be less rigid there.

Mr. Powell, as he recalls it, had a swell Minerva, a Belgian army chauffeur and a *laissez-passer* to anywhere when Irvin S. Cobb was getting lost in Belgian taxicabs and Frederick Palmer was warming his impatient toes in Downing Street.

After Belgium ceased to be the big parade ground, Powell went to London with a fever and told Kitchener he thought the war was going to last for at least three years. "I agree with you," Kitchener said emphatically.

Powell had it about right on many occasions. He tells us about them in this book, with no false modesty, and mighty little of any other kind of modesty.

Following a lecture tour among the eager Americans, Mr. Powell went to France in 1915. One day, at an army review, he was invited to join a party of five Frenchmen. Their names were Poincaré, Clemenceau, Foch, Joffre, and Millerand. The old Tiger, after expressing admiration for his writings, told Mr. Powell he could take a picture of the group if he so desired, but the camera wouldn't work. "*Que voulez-vous?*" said Poincaré, "*avec un appareil Boche?*"

The French accorded Mr. Powell practically an exclusive correspondent's-eye view of the Champagne offensive in 1915.

When Italy broke with Germany, Mr. Powell crossed the Alps, lent an ear to D'Annuzio's address in the Coliseum, saw Venice in its agony, and visited the frozen dugouts amid the eternal snows of the Carnia and Trentino. One day in Rome Ambassador Thomas Nelson Page, "himself an author," let him in on the secret that "the United States was on the verge of entering the great conflict."

When the United States entered the War, Powell instantly quit his reporting and returned to offer himself in the service of his own country. The story of that service is a revelation—not new, of course—of the priceless blundering and waste of personnel and capacity with which we per-

formed our part. None of it more characteristic or absurd than the punishment the Washington bureaucracy was able to inflict upon Powell for having, in Antwerp, run up in the face of the invading German horde, the American flag upon the American consulate whence the entire personnel, including the consul-general himself, had fled.

At the last he was put out of action by the falling of his horse upon him, and was invalided home, on the voyage hearing, two days out, the news of the Armistice. There are only a few Powell's equals in seeing and recounting, with consummate skill and artistry. [New York Herald Tribune Books, 22 October, 1933, and Saturday Review of Literature, 28 October, 1933]

Simonds, Frank H.—**America faces the next war.** 1933—82 pages..... M 004-D

CONTENTS: Preface; Introduction; How the last war came; Why the next war is coming; What Hitler means; What Germany wants; Where the League failed; U.S., neutral or belligerent?

Reviewed by Captain F. During, Infantry

In this little book, Mr. Simonds explains the dangers of war in Europe, describes the folly of Woodrow Wilson, Henry L. Stimson, Norman H. Davis, and Franklin D. Roosevelt in presuming that any man, let alone an American statesman, can subdue or mitigate those dangers, and concludes that the United States should withdraw into a shell of neutrality.

"Between neutrality and belligerency," writes Mr. Simonds, "there is no halfway station for any country in a world of war." Is there even that choice?

Does Mr. Simonds believe that, in case of war in Europe, American producers would willingly forego selling their goods to either side, as well as give up their sales in any country which in turn was trading with either side? Can anything short of that, under modern conditions, with the list of contraband extended as it has been, make a country neutral in fact?

Mr. Simonds has written a provoking little book. It opens up so many questions and stops so soon. [Saturday Review of Literature, 13 January, 1934]

Snow, Edgar.—**Far Eastern Front.** 1933—336 pages..... M 9518

CONTENTS: Preface; Descent of war; Birthplace of conquerors; Source of the sun; The Shang dynasty; Son of the Grand Marshal; Conspirators and conquest; Red, yellow and white; Prelude to paradise; The four hundred millions; Revolution and reaction; Nowhere else on earth; Merchandising, a La Japonais; East meets East; The course of battle; Paradise achieved; The march of conquest; Destinies in Asia; Bibliography.

Reviewed by Captain F. During, Infantry

Edgar Snow's book is the first account covering the whole period of hostilities, from the "Mukden incident" on 18 September, 1931, up to the armistice signed at Tangku on 31 May of last year. The account is supplemented by brief studies in the history of Japan, Manchuria, and China, and by a survey of events preceding the war. In the concluding chapter the author sets forth his views on the probable "Destinies of Asia."

The principal interest of this new contribution to the abundant literature on the Far East published in recent years lies in the fact that it has been written by an eyewitness, who describes what he saw and what he heard from the actors in the Sino-Japanese armed struggle. This personal feature of the story, which in addition is very ably told and bristles with wit and sarcasm, makes it easy reading.

The tale of what happened at Mukden during the night of the surprise attack by the Japanese on that city and thereafter; the many interviews, such as that with General Tamon, the conqueror of Tsi-tsihar, who "of all things was proudest that he had carried the Rising Sun across the Chinese Eastern Railway . . . and yet had provoked no Russian oppo-

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sition"; the frank statement of Governor Yuan Chinkai, who accepted office in the Manchukuo Government because of fear of being imprisoned or "possibly executed" by the Japanese; the highly interesting story of the "amazing" part played by Colonel Dohihara—all these and many other details add much to what is already known about the Japanese activities in Manchuria.

But it is the striking description of the battle of Shanghai, during which the Chinese astonished the world by their successful resistance to the repeated attacks of strong Japanese forces supported by numerous airplanes, tanks, and heavy artillery, firing on land and from warships, that holds the attention of the reader.

One of the mistakes of the Japanese, the author rightly sees, was in the "original underestimation" of the enemy's morale and strength; furthermore, prolonged resistance was made easier because of the peculiar nature of fighting conditioned by a densely populated city, a circumstance which placed the attacking side at a disadvantage. However, if judged by the World War standards, the casualties of the Chinese forces, 14,000 out of 78,000 (18 per cent), were not heavy. But the "casualties among the civilians (among these, women and children) included 8,080 known killed and 2,240 known wounded, with 10,400 'missing'." The panorama of Chapei and other places which the author visited after the battle "was sharp in images of carnage and horror."

The subsequent Jehol campaign, "a débâcle for the Chinese," during which the province was subjugated ten days after the Japanese delivered their ultimatum, clearly demonstrates what results may be expected when an attempt is made to oppose a modern army with an improvised and undisciplined one.

In the final chapter the author, speaking of the situation created by Japan's expansion of the continent, makes certain recommendations with a view to attacking the "fundamental causes of all conflicts in the Orient." He sees a possible solution in "a joint declaration" by the powers "adopting a twenty or thirty year plan of educating their colonies for complete self-government," because such a plan "might even yet break the militarist hold in Japan, and result in similar Japanese declarations with regard to 'Manchukuo' and possibly Korea." But he thinks the hope of attaining such results is "faint." With this, one is likely to agree. [New York Times Book Review, 29 October, 1933]

Section 7

LIBRARY BULLETIN

BOOKS ADDED TO THE LIBRARY SINCE JUNE 1934

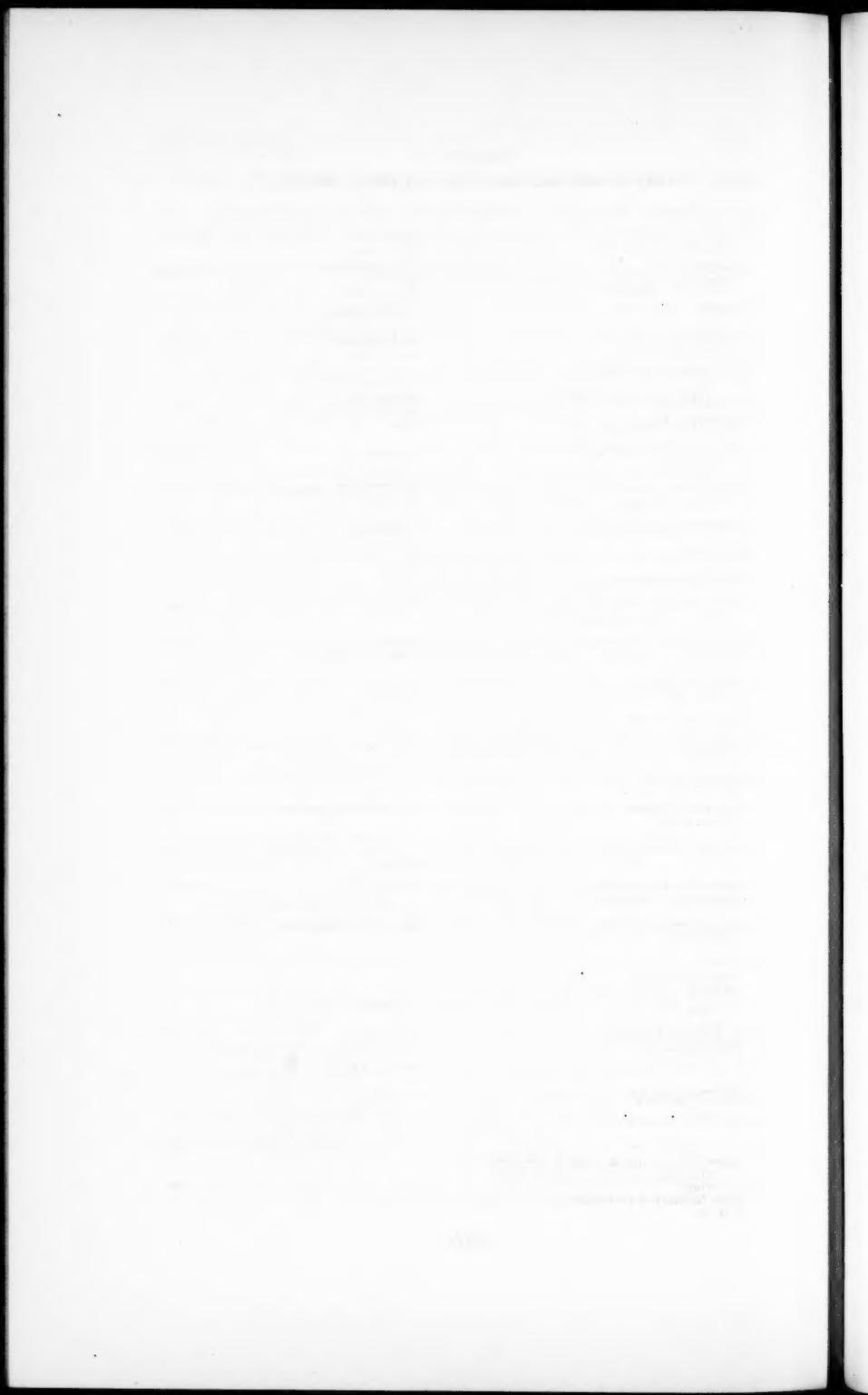
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Key to Abbreviations

A&N Jour—Army & Navy Journal	Mil Eng—Military Engineer
A&N Reg—Army & Navy Register	Mil Surg—Military Surgeon
AN&AF Gaz—Army, Navy & Air Force Gazette (Great Britain)	Nav Inst Proc—Naval Institute Proceedings
A Ord—Army Ordnance	Pioniere—Pioniere (Germany)
A Quar—Army Quarterly (Great Britain)	QM Rev—Quartermaster Review
Bul Belge Mil—Bulletin Belge des Sciences Militaires (Belgium)	Rev Ej Mar—Revista del Ejercito y de la Marina (Mexico)
Can Def Quar—Canadian Defence Quarterly (Canada)	Rv l'Air—Revue de l'Armee de l'Air (France)
Cav Jour—Cavalry Journal	Rv d'Art—Revue d'Artillerie (France)
Cav Jour [GB]—Cavalry Journal (Great Britain)	Rv de Cav—Revue de Cavalerie (France)
Cav Sch ML—Cavalry School Mailing List	Rv d'Inf—Revue d'Infanterie (France)
Chem War—Chemical Warfare	Rv Gen Mil—Revue du Génie Militaire (France)
CA Jour—Coast Artillery Journal	Rv Mil Fran—Revue Militaire Francaise (France)
Eser Naz—Esercito e Nazione (Italy)	Riv Art e Gen—Rivista di Artiglieria e Genio (Italy)
FA Jour—Field Artillery Journal	Roy AF Quar—Royal Air Force Quarterly (Great Britain)
Ftg Forc—Fighting Forces (Great Britain)	Roy Eng Jour—Royal Engineers Journal (Great Britain)
Inf Jour—Infantry Journal	Roy Tk C Jour—Royal Tank Corps Journal (Great Britain)
Jour R Art—Journal Royal Artillery (Great Britain)	SC Bul—Signal Corps Bulletin
Jour RUSI—Journal of the Royal United Service Institution (Great Britain)	Wr & Wf—Wehr und Waffen (Germany)
Jour USII—Journal of the United Service Institution of India (Great Britain—India)	Ws & Wr—Wissen und Wehr (Germany)
Kraftzug—Kraftzug (Germany)	Cur Hist—Current History
MC Gaz—Marine Corps Gazette	For A—Foreign Affairs
Mil Mitt—Militärwissenschaftliche Mitteilungen (Austria)	For Pol Rep—Foreign Policy Association: Foreign Policy Reports
Mil-Woch—Militär-Wochenblatt (Germany)	

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Toward the flame. [See Section 6]
Slanting lines of steel. [See Section 6]

G—Arms and Services

AIR ARM

The war of British aviation on the Zeppelins from 1914 to 1918. (Rv l'Air—Jan 1934)
Aviation at the Dardanelles. (Rv l'Air—Mar 1934)
Can we shoot down the low-flying attack plane? (Cav Sch ML—15 Jun 1934)
Antiaircraft defenses: Their development during the World War. (CA Jour—May-Jun 1934)
Air Forces in the Great War: Some strategical lessons. (Jour RUSI—May 1934)

ARTILLERY

The Looeien batteries. (Rv d'Art—Feb, Mar 1934)
Antiaircraft artillery with the field armies. (Rv d'Art—Mar 1934)
The employment of artillery in attack when a flank is exposed. (Mil-Woch—25 Mar 1934)
Artillery in rear guard action. (Mil-Woch—11 May 1934)
Antiaircraft defenses: Their development during the World War. (CA Jour—May-Jun 1934)

CAVALRY

The Austro-Hungarian Army Cavalry at the beginning of the War. (Mil-Mitt—Jan 1934)
Cavalry reconnaissance. (Rv Mil Fran—Feb 1934)

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Mounted cavalry attacks against infantry in 1915. (Mil-Woch—11 Apr 1934)
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The gap in the Marne battle. (Mil-Woch—4 May 1934)

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Cavalry in France, August-November, 1918. (Cav Jour [GB]—Jul 1934)

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Darfur. (Cav Jour [GB]—Jul 1934)
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Cavalry at Tannenberg. [See Section 2]

CHEMICAL WARFARE SERVICE

Tactical uses of Chemical Warfare gases and examples of their application during the World War. (Chem War—Apr 1934)

ENGINEERS

The crossing of the Sazera in September 1915. (Pioniere—Feb 1934)

From a war diary. (Pioniere—Feb 1934)
Demolitions carried out at Mons and during the retreat of 1914. (Mil Mitt—Jan, Feb, Mar 1934)

With the 1st Company, 3d Engineers, from Dinant to the Marne. (Rv Gen Mil—Mar-Apr 1934)

A demolition raid. (Roy Eng Jour—Jun 1934)

INFANTRY

From the days of Luck in the late spring 1916. Personal experiences of a brigade commander. (Mil Mitt—Jan 1934)

The employment of artillery in attack when a flank is exposed. (Mil-Woch—25 Mar 1934)
Mounted cavalry attacks against infantry in 1915. (Mil-Woch—11 Apr 1934)

Can we shoot down the low-flying attack plane? (Cav Sch ML—15 Jun 1934)

MEDICAL SERVICE

A soldier in science. [See Section 6]

SIGNAL SERVICE

A major offensive, as seen by a signal officer. (Rv Gen Mil—Mar-Apr 1934)
Signal communications of the Ninth German Army in the Lodz operations from November 11 to 26, 1914. (SC Bul—May-Jun 1934)

TANKS

German tanks in attack in 1918. (A Quar—Jul 1934)

The employment of German tank units on the Western Front, October 1918. (Kraftzug—Aug, Sep, Oct, Nov 1933)

Lost chance at Cambrai. (Roy Tk C Jour—May 1934)

Summary of tank operations, 1916-18. (Roy Tk C Jour—May, Jun 1934)

The first—and last—night attack with tanks. (Roy Tk C Jour—May 1934)

WORLD WAR—H & J

A company of tanks: The first battle of Bullecourt (April 11th, 1917). (Roy Tk C Jour—Jun 1934)

H—Military Conduct of the War in the Field

A critical analysis of night attacks by British troops in the World War. [See Section 1] "The other side of the hill." No. XII. The night attack at Landrecies: 25th of August, 1914. (A Quar—Jul 1934)

The battles of General Samsonov's Army on the 26th, 27th and 28th August 1914. (Jour USII—Apr 1934)

Characteristic example of the conduct of war by the Entente, 1914-1918: The expedition to Salonika. (Rv Mil Fran—Jan 1934)

German strategy in 1918. (Rv Mil Fran—Feb, Mar 1934)

Night operations. (Rv d'Inf—Dec 1933)

Leadership. (Mil-Woch—11 Mar 1934)

The employment of artillery in attack when a flank is exposed. (Mil-Woch—25 Mar 1934)

The gap in the Marne battle. (Mil-Woch—4 May 1934)

Filling of a gap which appeared during an attack. (Mil-Woch—4 Jun 1934)

"The genius of the French Army." (A Ord—May-Jun 1934)

Shells, shrapnel and statecraft. Great Britain's ammunition supply in the World War. (A Ord—Jul-Aug 1934)

The French plan of campaign and the first month of the War (2 August-3 September 1914). [See Section 6]

J—Campaigns and Battles

AFRICAN AREA

The Holy War of the Senouasya. (Rv Mil Fran—Feb, Mar 1934)

Darfur. (Cav Jour [GB]—Jul 1934)

ASiATIC AREA—TURKISH THEATER

Dardanelles (Gallipoli) Front

Aviation at the Dardanelles. (Rv l'Air—Mar 1934)

Study on Coast Defense and fortified areas. (Rv Mil Fran—Jan 1934)

Mesopotamian Front

The Mesopotamian campaign through Turkish spectacles. (A Quar—Jul 1934)

The formation of a battery. (Jour R Art—Jul 1934)

EUROPEAN AREA—BALKAN THEATER

Grecian Front

Characteristic example of the conduct of war by the Entente, 1914-1918: The expedition to Salonika. (Rv Mil Fran—Jan 1934)

Montenegrin Front

The Lovcen batteries. (Rv d'Art—Feb, Mar 1934)

Serbian Front

Skoplje: An exploit of the French cavalry. (Ftg Force—Jun 1934)

EUROPEAN AREA—ITALIAN THEATER

The plan of attack of the Austro-Hungarian Eleventh Army in May 1916 in South Tyrol. (Mil Mitt—Feb 1934)

EUROPEAN AREA—RUSSIAN THEATER

The crossing of the Szczara in September 1915. (Pioniere—Feb 1934)

From the days of Luck in the late spring 1916. Personal experiences of a brigade commander. (Mil Mitt—Jan 1934)

The battles of General Samsonov's Army on the 26th, 27th and 28th August 1914. (Jour USII—Apr 1934)

Russia's road to Tannenberg, 1914. (Mil-Woch—18 May 1934)

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Cavalry at Tannenberg. [See Section 2]

EUROPEAN AREA—WESTERN THEATER

1914

Demolitions carried out at Mons and during the retreat of 1914. (Mil Mitt—Jan, Feb, Mar 1934)

Foch's pivot at the battle of the Marne, 1914. The operations of the Moroccan Division. (A Quar—Jul 1934)

"The other side of the hill." No. XII. The night attack at Landrecies: 25th of August, 1914. (A Quar—Jul 1934)

The battle of the Marne, 8th and 9th of September, 1914. (A Quar—Jul 1934)

How the fort of the Camp of the Romans was captured. (Rv d'Art—Feb 1934)

The collision of armies. (Rv Mil Fran—Jan 1934)

River crossings in open warfare. The Battle of the Meuse, 25 to 28 August 1914. (Rv Mil Fran—Feb, Mar 1934)

Cavalry reconnaissance. (Rv Mil Fran—Feb 1934)

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The menace to Paris, and cavalry action of Nery, 1st September, 1914. (Cav Jour [GB]—Jul 1934)

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With the 1st Company, 3d Engineers, from Dinant to the Marne. (Rv Gen Mil—Mar-Apr 1934)

La Cateau, 26 August, 1914. (FA Jour—May-Jun 1934)

The French plan of campaign and the first month of the War (2 August-3 September 1914). [See Section 6]

1916

The 10th Group of Armored Cars in the Battle of the Somme. (Rv de Cav—Mar-Apr 1934)

1917

Nivelle: A review of the French Official History of the War. (A Quar—Jul 1934)

A major offensive, as seen by a signal officer. (Rv Gen Mil—Mar-Apr 1934)

Lost chance at Cambrai. (Roy Tk C Jour—May 1934)

A company of tanks: The first battle of Bullecourt (April 11th, 1917). (Roy Tk C Jour—Jun 1934)

1918

From a war diary. (Pioniere—Feb 1934)

German tanks in attack in 1918. (A Quar—Jul 1934)

The employment of German tank units on the Western Front, October 1918. (Kraftzug—Aug, Sep, Oct, Nov 1933)

German strategy in 1918. (Rv Mil Fran—Feb, Mar 1934)

The employment of artillery in attack when a flank is exposed. (Mil-Woch—25 Mar 1934)

Cavalry in France, August-November, 1918. (Cav Jour [GB]—Jul 1934)

The first—and last—night attack with tanks. (Roy Tk C Jour—May 1934)

WORLD WAR—L-YUGO

L—Naval History

The triumph of convoy 1917-18. (AN&AF Gaz—28 Jun 1934)

WEAPONS

The Thompson Submachine rifle. (Mil Mitt—Feb 1934)

The 20-mm. machine cannon Breda. (Mil Mitt—Jan 1934)

The origin of the Minenwerfer. (Wr & Wf—Feb 1934)

Tanks and antitank weapons. (Riv Art e Gen—Feb 1934)

Employment of infantry weapons in mountain warfare. (Rv d'Inf—Jan 1934)

Rise and fall of weapons. (Mil-Woch—4 Jun 1934)

The 20-mm. cannon for airplanes. (Mil-Woch—4 Jun 1934)

Bombs vs. projectiles. (A Ord—May-Jun 1934)

Infantry weapons. (A Ord—Jul-Aug 1934)

Jungle warfare weapons. (MC Gaz—May 1934)

What about the bayonet? (Inf Jour—Jul-Aug 1934)

Weapons or war. (Jour RUSI—May 1934)
The value of obsolete warships and weapons. (Jour RUSI—May 1934)

"What effect are modern developments in aviation, armoured and mechanical vehicles, and automatic weapons likely to have on the tactical employment of artillery . . . ?" (Jour R Art—Jul 1934)

Defense against armored vehicles. [See Section 2]
Infantry and artillery fire relationship (liaison). [See Section 2]

WITHDRAWAL

Cavalry in France, August-November, 1918. (Cav Jour [GB]—Jul 1934)

YUGOSLAVIA (ARMY OF)

Budgets for defense. (Mil-Woch—18 Apr 1934)

Development of state and army in Yugoslavia. (Mil-Woch—18 May 1934)

Case No.	Place	Date and Hour of Assault	Units Engaged	Frontage (yards)	Time Orders Issued	Preparation					Simple
						Definite Orders	Adequate Time	Daylight Reconnaissance	Special Training	Special Identification	
1	Festubert, France	15 May 1915, 11:30 PM	2 brigades, 2d Division, 1 brigade, Meurut Division (10,000 infantry)	1700	During 13-14 May	Yes	Yes	Yes; ground well known		White patch on chest and back	Yes
2	Neuve Chapelle, France	10 May 1915, after 6:00 PM	5 battalions Indian Corps (3 main effort, 2 support)	600	10 May, 3:50 PM						Yes
3	Hill 60, Ypres, France	17 April 1915, 7:30 PM	18th Brigade (above ground)			Probably	Probably, yes	Yes	Yes		Yes
4	Kitchener's Wood, France	22-23 April 1915, midnight	10th and 16th Battalions of 3d Canadian Brigade		22 April, 8:25 PM						
5	Pozieres, France	28 July 1916, 12:30 AM	1st Australian Division (3 brigades)	1800	18 July (as day attack 16 July)	Probably	Yes	Presumably		White, blue, and green ribbons on shoulders of men of 1st, 2d, and 3d lines	Yes
6	Vicinity of Pozieres, France	25 July 1916, 1:50 AM	3d Brigade and 5th Battalion and 2 companies, 7th Battalion, 2d Brigade (Australian)	600	24 July		Yes	Yes		Presumably	Yes
7	(2d attack) Pozieres Heights, France	4 August 1916, 9:15 PM	2d Australian Division (3 brigades)	1400	29 July	Yes	Yes	Yes		Piece of bright tin between shoulders	Fairly so
8	Mouquet Farm, France	8 August 1916, 9:20 PM	15th Anzac Battalion (also Battalion 7th Suffolk)	Approximately 700	5 August, 11:30 AM	Probably	Yes	Probably	Yes; in back area		Yes
9	Mouquet Farm, France	9-10 August 1916, midnight	14th, 15th, 16th Battalions, 4th Australian Division	Approximately 750	Probably AM, 9 August	Yes	Yes	Yes			Yes (?)
10	Mouquet Farm, France	12 August 1916, 10:30 PM	12th Division (British), 2 battalions I Anzac	2800	10 August	Vague	Apparently not	?	No		Yes
11	Sari Bair (Lone Pine), Gallipoli	6 August 1915, 5:30 PM	1st Australian Brigade	2020			Yes	Probably			Yes (?)
12	Landing at Suvla, Gallipoli	6 August 1915, 10:40 PM	11th Division (3 brigades)	5000 (total)	5 August, 8:00 PM	Yes	?	At a distance only	Very limited	White patches on haversacks and white arm bands	Yes
13	Bait Isa, Mesopotamia	15 April 1915, 4:45 AM	3d Division and 38th Brigade (2 brigades in main effort)	800	13 April, 9:00 PM	Yes	Apparently	Evidently but limited			Yes
14	Passage of Adhaim River, Mesopotamia	18 April 1917, 2:20 AM	7 squadrons, (cavalry) 8 battalions, (infantry) 40 guns	Total (including feint 6200)	17 April, 3:00 PM (instruction 10 April)		Apparently	Probably			Yes
15	Dojran, Greece	24 April 1917, 9:45 PM	26th Division (... Brigade) and considerable artillery	2000		Probably	Yes	Yes			Yes
16	Prosenik, Greece	15 May 1917, 7:30 PM	1st Division and 1 Brigade 2d Division	14000	25 April		Yes	Probably			Yes
17	Machukovo, Greece	14 September 1916, 2:00 AM	5 battalions (2 main effort, 2 flank, 1 reserve)	900			Yes				Yes
18	Gaza, Palestine	2 November 1917, 11:10 PM	54th Division and 156th Brigade of 62d Division (also artillery and engineers)	4000	Early	Yes	Yes	Probably	Yes		Fairly so
19	Sidud, Palestine	10 November 1917, 6:30 PM	157th Brigade		10 November, 4:00 PM		No	No			Yes
20	Passage of the Auja River, Palestine	20 December 1917, 8:00 PM	52d Division	5000-6000	Early	Yes	Yes	Yes	Yes		Yes (?)
21	Jerusalem, Palestine	8 November 1917, 2:00 AM	Battalion of 179th Brigade Company Engineers	Approximately 1000	Early	Yes	Yes	Yes			Yes (?)
22	Passage of Jordon, Palestine	21-22 March 1918, midnight	Australian and New Zealand Mounted Division, 68th Division (camel brigade and armed cars, artillery and engineers)	2 points 3 miles apart	16 March	Yes	Yes	Yes; repeated by Infantry and artillery			Yes
23	Garua, Africa	29-30 August 1914, midnight	4 infantry companies (mounted, infantry, [det.] machine guns, and limited artillery)	3 forts, total 1900	29 August AM		Probably	Distant			No; too long approach
24	Neuve Chapelle, France	18 May 1915, 11:30 AM	23d and 24th Brigade of 8th Division	400	13 May, 6:15 PM	Verbal	No	Unfamiliar with ground			
25	Bellaverde Ridge, France	24 May 1915, 11:00 PM	80th and 84th Brigades	1300	24 May, after 7:00 PM		No		No		No
26	Vimy Ridge, France	28 May 1916, 8:25 PM	3 brigades (of three different divisions)	1500	22 May, 8:30 AM	Probably not	Yes	Careful preparation ordered			Yes
27	Sugar Loaf, Fromelles, France	19 July 1916, 9:00 PM	182d and 183d Brigades and part of 15th Brigade	1400	19 July, 7:30-8:00 PM	?	No	Yes			Yes
28	Pozieres Heights, France	29 July 1916, 12:15 AM	2d Australian Division (5th, 6th, and 7th Brigades)	1200	26 July, PM	Not clear for 5th Brigade	Apparently not	Hurried and limited		Piece of tin on back of each man	Fairly
29	Mouquet Farm, France	18 August 1916, 9:10 PM	1st, 3d, and 4th Battalions, 1st Brigade, 1st Australian Division (1st Battalion in reserve)	950	15 August	Yes	Yes	Yes	No		Yes
30	Mouquet Farm, France (windmill)	18 August 1916, 9:10 PM	6th, 8th, and one-half 7th Battalions, 2d Brigade, 2d Australian Division	1100	15 August	Yes	Yes	Yes	No		Yes
31	Mouquet Farm, France (windmill)	29 August 1916, 11:00 PM	13th and 16th Battalions, 4th Australian Division	1500	28 August, AM	Yes	Yes	Ground well known	No		Fairly
32	Fiers, France	5 November 1916, 12:30 AM	2 Companies, 1st Battalion, and bombers, 3d Battalion, 1st Australian Division	Approximately 900	3 November	Yes	Yes				Yes
33	Amiens, France	10 August 1918, 10:00 PM	16th Australian Brigade and tanks		10 August, 3:30 PM	Verbal	No	No			No
34	"Baby 700," Gallipoli	2 May 1915, 7:15 PM	8 battalions of General Godley's Division with naval and artillery gun support	Approximately 1000	1 May, AM, or sooner		Yes	Probably			No; very complicated, difficult
35	Helles, Gallipoli	6 August 1915, 9:30 PM	86th Brigade (2 regiments)		6 August, after 7:00 PM	?	No	No		Metal disk on back	
36	Sari Bair, Gallipoli	6 August 1915, start at dark	New Zealand and Australian Division (20,000 rifles)	1800	5 August	Yes	Yes; several weeks' knowledge	Inadequate			No
37	Amman, Palestine	30 March 1918, 2:00 AM	New Zealand Brigade, 2d L.H. Brigade	Approximately 2100 (exclusive of interval)	28 March	Probably	No; on account of road situation	Probably			No (?)
38	Sannaiyat, Mesopotamia	9 April 1916, 4:20 AM	18th Division (234 officers and 7,120 men), 7th Division (3250 rifles)	600 200 800 total	7 April	Evidently	Yes	Yes			Fairly
39	Diyala, Mesopotamia	7 March 1917, 11:00 PM	88th Brigade, 3 Companies Pioneers, bridging train, and artillery (18th Division)	Very near point crossing	7 March, 5:50 PM		No	Only cavalry reconnaissance			
40	Diyala, Mesopotamia	8-9 March 1917 midnight	88th Brigade, 3 companies of engineers, artillery	300 (exclusive of feint)	8 March, 11:15 AM		?	Probably			Apparent
41	Virhani, Greece	18 November 1916, AM	2 battalions engineers, 1 company engineers, 1 section machine guns		17 November after 3:00 PM		No	No			Yes
42	Tumbitza Farm, Greece	7 December 1916, AM	1 battalion and bombers		6 December, 8:50 PM		No	No; (?) at most limited			Yes
43	Dojran, Greece	24 April 1917, 9:45 PM	26th Division and considerable artillery	3000	9 April	Probably	Yes	Yes			Yes
44	Dojran, Greece	8 May 1917, 9:50 PM	26th Division (less one brigade and heavy artillery)	2500	2 May	No (?)	Yes; most units	Yes; new ground			Yes

BRITISH NIGHT ATTACKS

Example	Definite Direction	Plan				Assembly Area and L.O.D.	Artillery Preparation and Support	Support to Infantry other than Artillery	Weapons Used	Troops' Experience and Morale	Weather
		Limited	Well Defined	Feint or Diversion	Provision for Success or Failure						
Yes; marked by furrows	Yes	Fairly well	Yes	Corps reserves in readiness	Both	Preparation and support; 2½ days' preparation	Aviation	A, B, C, D	Experienced	Overcast sky, quite dark	Foggy
Road, stream, and burning cottage assisted	Yes	Yes			L.O.D.	Support, but ineffective		A, C	Experienced	Thick clouds brought early darkness	Solid
Prominent hill	Yes	Yes	No		Both	No preparation or support	Mining	B, D	Experienced	Fine weather, still night; no firing	Open
		Trouble in location		Went beyond objective but retired because of lack of support						Failing moonlight	None
Yes	Yes	Yes	Yes; other large attack		L.O.D., taped assembly trenches	Preparation and support, five hour bombardment		A, B, C,	Comparatively new troops; morale apparently good	Midsummer weather, moonlight late	Shade
Yes	Yes; area near at hand	No	Other night attacks		Both	Preparation and support		A, B, C, D	Tired, but in high spirits		Shade
?	Yes	Fairly definite			Jumping off trench	Preparation and support, several days' bombardment		A, D, trench mortars	Experienced; morale poor at first but improved; leaders cautious	Favorable	Dark
Yes	Yes	Fairly so	Yes			Preparation and support, thorough bombardment		B, C, gas shell	Inexperienced; careful leaders		Dark
(?)	Yes; marked by colored lights	Yes	No	No		Two days' prior bombardment, five minute preparation			Experienced	Little rain during day	
Yes	Yes	Fairly	No		L.O.D.	Creeping barrage covering advance		B, D			
(?)	Probably	Yes	No (?)			One hour preparation, naval cruiser assisting				Moon at 2:00 AM	
?	2 miles from shore (bridge-head)	No	Yes			Support		B, rifles unloaded	Limited experience	Moon at 2:00 AM; clear	Calm
By compass	Yes	No				Prior bombardment; no immediate preparation				Thunderstorm; steady rain; very dark	Bad
Obviously	Yes, first stage	?	Yes								Rainy
Yes	Yes	Fairly so	Yes	Reserve close up	Assembly position	Three-day bombardment; support; no preparation		A and Stokes mortars	Experienced leaders especially good	Confusion in dark	Extremely
	Yes	Fairly well marked				Barrage support			Experienced		Low
Yes	Yes	Yes			Both	Preparation and support; one and one-half days of wire cutting		A	Experienced		Round
?	Yes	?	Yes; naval and land	Artillery barrage prepared in advance	L.O.D., taped	Long bombardment; preparation and support	Aviation and naval fire		Experienced	Cloudy and hazy	Sea (night)
By compass	Yes	?	No			Little artillery		B, C, and Stokes mortars	Experienced	Hot	Round
(?)	Yes	Yes	Yes			Support; no immediate preparation		B	Experienced	Clear; half-moon	River mouth
(?)	Fairly so	Yes	Fairly well	No	Stone wall (L.O.D.)	No preparation or support		A, D	Experienced	Rained all night; intense darkness	Rough
Yes	Yes	No	Yes			No preparation			Experienced	Clear and cold	Swift
too long approach	?	Yes	Yes	Reserve company held out							Open ground
		No		Assembly positions		Some preparation, but entirely inadequate		Cavalry (?)		Experienced, but tired and worn-out	Sold out
Probably	Yes	Fairly good (old trenches)			Both	One hour preparation		A		Inexperienced; largely recruits	Open
Yes	Yes	Yes				Apparently preparation was called off				At least two-thirds experienced	Open
?	Yes	No; first wave went through	No	No jumping off trench considered necessary then		All day (28th) bombardment; one minute preparation		C, D		Limited experience; morale good	Opening
Probably	Yes	Poorly	Other attacks		L.O.D. given	Preparation and support		A, C		Inexperienced; many reinforcements	Barren
Probably	Yes	Fairly	Other attacks		L.O.D., part pegged, part trench	Preparation, creeping barrage in front of assault wave		A, C		Inexperienced; many reinforcements	Barren
Fairly	Yes	Fairly				Prior bombardment, barrage		A, C, D		Raining	Mountainous
Yes				Jumping off trench		Barrage ahead of assault wave				Raining	Mountainous
Doubtful	Yes	Yes						Tanks	D and one-pounders		Foggy
Fairly	Yes	Apparently; ridge and hill	No	L.O.D. narrow valley		Preparation and support				Inexperienced	Ideal weather
	Yes					Preparation and support planned					Very
Not clear	No; 3 miles to go	No	Yes	Reserves centrally located	L.O.D. specified	Preparation and support (naval and land)	Cavalry, engineers, naval cruiser	B (rifles not loaded)	Inexperienced; many new	Clear; some light moon at 2:00 AM	Excessive
(?)	Fairly so	Yes	Yes	Yes		Probably no preparation; only a few mountain batteries		B	Experienced but tired		Misty
Apparently	Yes; stages	Probably				No preparation; previous artillery fire; support		A	Little experience	Very cold and dark	Evening
Cross river	Yes		No (?)						Experienced	Bright moonlight night	River side
Apparently	Cross river	Apparently		Yes		Preparation and support		A, D	Experienced		River side
Yes	Yes	Fairly well				Artillery preparation planned			Experienced	Very dark	Low (at night)
Yes	Yes	Yes									Low (at night)
Yes	Yes	Fairly so	Yes	Reserves close up	Both	No preparation; support; three-day prior bombardment		A	Experienced	Confusion in dark	Extreme
Yes	Yes	Fair	Yes	Reserves close up	Both	Two-day bombardment; support		A	Experienced	Good moon	Extreme

BRITISH NIGHT ATTACKS

Preparation and Support	Support to Infantry other than Artillery	Weapons Used A = Bombs B = Bayonets C = Rifles D = Machine Guns	Troops' Experience and Morale	Weather	Terrain	Outguards Vigilant and Patrols Active		Weapons A = Bombs B = Bayonets C = Rifles D = Machine Guns
						Position Organized A = Trench B = Wire	Outguards Vigilant and Patrols Active	
Preparation and Support; 2½ days' preparation	Aviation	A, B, C, D	Experienced	Overcast sky, quite dark	Fallow flat ground, weeds and grass one foot high	A, B	Outguards vigilant; observed preparation	C, D, artillery
Support, but ineffective		A, C	Experienced	Thick clouds brought early darkness	Sodden country cut by roads, ditches, and hedges	A		C, D
No preparation or support	Mining	B, D	Experienced	Fine weather, still night; no firing	Open country	A	?	C, D
				Failing moonlight	Nearly flat, partially wooded			
Preparation and support, five hour bombardment		A, B, C	Comparatively new troops; morale apparently good	Midsummer weather, moonlight late	Shell-holed village	A, B (partial)	Outguards vigilant	A, B, D, shrapnel, and gas shell
Preparation and support		A, B, C, D	Tired, but in high spirits		Shell-torn ground	A	Outguards vigilant	A, B, C, D, and artillery
Preparation and support, several days' bombardment		A, D, trench mortars	Experienced; morale poor at first but improved; leaders cautious	Favorable	Dry, shell-pitted earth	A	Outguards not vigilant; some patrolling	Practically no resistance; some A and D
Preparation and support, thorough bombardment		B, C, gas shell	Inexperienced; careful leaders		Difficult	A, B	Some outguards alert	Little resistance
Two days' prior bombardment, five minute preparation			Experienced	Little rain during day	Shell-holed, barren area; difficult	A, B	Outguards probably not alert	
Creeping barrage covering advance		B, D			Shell-holed, barren area; difficult	A, B	Outguards vigilant	A, C, artillery barrage
One hour preparation, naval cruiser assisting	Tunneled approach to enemy			Moon at 2:00 AM	Extremely difficult	A, some B; trenches roofed		A
Support	Limited gun support	B, rifles unloaded	Limited experience	Moon at 2:00 AM; clear	Open and sandy	A, some B		C, D, and artillery
Prior bombardment; no immediate preparation			Experienced (?)	Thunderstorm; steady rain; very dark	Boggy and marshy		?	
			Experienced	Dark and dusty	River crossing; rough, steep banks	A	Probably not	
Three-day bombardment; support; no preparation		A and Stokes mortars	Experienced leaders especially good	Confusion in dark	Extremely rugged and difficult	Strong; A and B		Artillery
Barrage support			Experienced		Lowland (valley)	Partially organized		
Preparation and support; one and one-half days of wire cutting		A	Experienced		Rough and bare	A and B		
Long bombardment; preparation and support	Aviation and naval fire		Experienced	Cloudy and hazy	Seashore sand; no vegetation (no cover)	A and B	Outguards alert	C, D, and artillery
Little artillery		B, C, and Stokes mortars	Experienced	Hot	Rough			B, C, and D
Support; no immediate preparation		B	Experienced	Clear; half-moon	River 40 to 50 yards across, muddy banks	A, B	Outguards sluggish; patrols not active	Artillery
No preparation or support		A, D	Experienced	Rained all night; intense darkness	Rocky and rough	A, B	Outguards sluggish; patrols not active	A, D, and artillery
No preparation			Experienced	Clear and cold	Swift, swollen narrow stream		Outguards alert	C, D
	Mounted infantry	B, C, D	Not experienced; mixed command		Open slopes, rocky ravines, grass two feet high	Three forts	No	Artillery
			Experienced, but tired and worn-out	Low clouds and mists, intense darkness	Sodden country, cut by roads, ditches, dykes, and hedges	A, B, and thorned hedge	Outguards apparently vigilant	C
Some preparation, but entirely inadequate	Cavalry (?)		Inexperienced; largely recruits	Moonlight (bright)	Muddy and water-soaked	A	Vigilant detected by enemy in moonlight	C, D
One hour preparation		A	At least two-thirds experienced		Open slope toward British		Outguards probably vigilant	
Apparently preparation was called off			Limited experience; morale good	Failing twilight at start	Open bare ground	A, B	Vigilant	D
All day (28th) bombardment; one minute preparation		C, D	Inexperienced leaders, optimistic but untried	Quiet night	Dry, shell-torn earth	A, B	Vigilant	A, C
Preparation and support		A, C	Inexperienced; many reinforcements		Barren, war-torn area	A, B	Probably vigilant	C and artillery
Preparation, creeping barrage in front of assault wave		A, C	Inexperienced; many reinforcements		Barren, war-torn area	A, B	Probably vigilant	C and artillery
Prior bombardment, barrage		A, C, D		Raining	Mud and shell holes	A, B	Vigilant	C, D, and artillery
Barrage ahead of assault wave				Raining	Mud and shell holes	A, B	Vigilant	A, C, D
	Tanks	D and one-pounders			Fairly open, war-torn			A, D, artillery
Preparation and support			Inexperienced	Ideal weather	Mountains; extremely difficult	Probably A		
Preparation and support planned					Very difficult	A	Probably vigilant	C, D
Preparation and support (naval and land)	Cavalry, engineers, naval cruiser	B (rifles not loaded)	Inexperienced; many new	Clear; some light moon at 2:00 AM	Extremely difficult	Some A; limited B	No	
Probably no preparation; only only a few mountain batteries		B	Experienced but tired		Muddy and rough		Apparently vigilant	D and artillery
No preparation; previous artillery fire; support		A	Little experience	Very cold and dark	Evidently wet marshy ground	A, B (some gaps in B)	Patrols active	A, C, D, and artillery
			Experienced	Bright moonlight night	River 120 yards wide; banks steep; current slow	A	Vigilant	D
Preparation and support		A, D	Experienced		River 120 yards wide; banks steep; current slow	A	Evidently vigilant	A and artillery
Artillery preparation planned			Experienced	Very dark	Low, marshy ground (stream crossing)	A	Vigilant	
					Low, marshy ground (stream crossing)	A, B	Vigilant	
No preparation; support; three-day prior bombardment		A	Experienced	Confusion in dark	Extremely rugged and difficult	A, B (strongly organized)	Vigilant (?)	A, C, D, and artillery
Two-day bombardment; support		A	Experienced	Good moon	Extremely rugged and difficult	A, B		A (rifle), trench mortars

my ing	Illumi- nation	Morale and Discipline	Counterattack	Surprise	Success	Reason for Attack	Remarks
	Light balls, searchlight	Inferior in numbers; had suffered heavy losses	Apparently not	For one brigade only	Partial; bri- gade hav- ing surprise successful	Enemy position very strong with excellent observation; two daylight assaults had failed	First assault of first British night attack of war (see summary); storage heavy guns and ammunition; limited artillery preparation to actual frontage of 2d Meerut Division, thereby discounting factor of surprise
				Partial	Partial	Extension of day's successful attack	Planned as day attack, but delayed until after dark. Considerable dis- organization; partook somewhat of nature of pursuit
		Morale shattered by mine explosions	Three, after midnight	Complete	Yes	To minimize losses; strong position with dominant observation; country open; objective limited (front and depth)	Attack opened with explosion of 5 mines under hill; heavy bombardment followed (light and heavy artillery) on all approaches to hill. Only 7 cas- ualties. Attack marked by careful preparation and complete surprise.
			No; but fire caused heavy losses	Yes	Temporary	Counterattack by division reserves in com- pliance with request of French for coopera- tion	Counterattack carried out with decision, rapidity, and courage. A com- plete success, but with no support, the ground could not be maintained. The lack of support was blamed on the French.
ol,	Flares and rockets	Probably good	Yes; daylight failed	Probably partial	Fair degree	Four previous attacks had failed; as heavy machine-gun fire was anticipated, objective close and well marked, a night attack was considered better than by day.	Attack originally planned for morning 21 July; twice postponed. One of the two buttresses of the enemy's northern flank had been broken.
sis-	Extensive use of flares	Fresh troops	Yes	Yes; (met German attack)	Partial	Probably success of night attack, 23 July, influenced decision as to time. Enemy position very strong.	Reached objective and began to dig in, but were ordered to evacuate, as Germans were advancing in parallel trench and would bottle them up. One of the most desperate bomb fights of A.I.F. followed. The range of German bombs was greater than the Australian bombs.
	Flares		Yes	Yes	Yes	Difficult position; exposed approaches; night attack to reduce losses	Pozieres Heights won; position of much importance gained by same brigades that had failed 29 July; a staggering blow to enemy; time for digging jumping off and connecting trenches; element of surprise in time of attack
		Troops tired	Yes; next AM	Yes; most of front	Yes	Terrain exceedingly difficult. Previous day's attack unsuccessful. Apparently timed because of preceding successful night attack.	Battalion of 7th Suffolk participated, but details not included in account. Australians had to give up part of the objective because of lack of suc- cess of British.
		New troops; spirits high	Yes; next PM	Yes	Complete	Open country in sight of enemy; therefore night attack to gain possession of skyline trench and other salient points of area.	Complete and almost bloodless success. Captured all objectives, including German machine guns and crews.
	Flares		Yes; next day took sky-line trench	No	Extremely limited	Evidently the Australians did not consider a daylight attack in this open country with enemy in strong position.	II Corps captured skyline trench. Part of I Anzac successful; other part failed probably because of lack of surprise, as Germans had observed approach of troops and their assembly at 9:00 PM.
			Yes	Yes	Yes (?)	To draw reserves from north preparatory to attack there later in the night.	Although objective was secured, enormous losses were incurred and reserves were drawn from the south as well as from the north, thus actually increasing forces available to the enemy for the morrow.
			Yes	Partial	Limited	To secure bridgehead to cover landing of main forces during daylight	Indicates difficulties that may be experienced landing on a strange coast. One party secured surprise and had easy going. Two others, lacking it, met stiff opposition.
			Yes	Yes	Yes	Apparently planned as a dawn attack, to start under cover of darkness; sunrise 5:30 AM. Weather made it a night attack.	Troops had evidently been warned of attack prior to the issue of orders and made the attack on schedule. 7th and 9th Brigades under inde- pendent command of their brigadiers.
		Probably low	No	Yes	Yes	River crossing, first stage preparatory to further advance by main body	Apparently almost a complete surprise and entirely successful. Turks withdrew during the day.
	Searchlights	Discipline good	Yes	Yes; met little resis- tance	Yes	Enemy position considered too strong for day attack	Part of a general offensive; preliminary step. Enemy position had no great depth at this point. Some confusion in higher command regarding plan. (See case 38.)
			Yes; daylight	Probably	Yes	Very open ground	Part of strategical operation to pin Bulgarians to position. Attack probably a surprise, as enemy offered little opposition until next day
		Good	Yes	Yes (?)	Yes; tem- porary	Difficult terrain to attack because of strength and superior observation of enemy position	Attack made to pin enemy to front and prevent him from sending rein- forcements to Monastir. Though plan did not contemplate more than a limited objective, evidently commanding ground (700 yards to front) should have been taken at daylight.
			Yes	Yes; but not com- plete	Yes	On account of distance between lines and open terrain; anticipated less risk from loss of direction at night than from enemy fire at daylight.	Example of careful preparation with particular emphasis on the factor of surprise. Confusion during attack caused heavy losses. 800 to 1200 yards between lines
	Rockets	Morale probably low; discipline (?)	Yes	Probably not	Yes	To secure important water supply at once	Despite fatigue of troops and without reconnaissance, force pushed on and captured objective. Enemy weak
		Shaken by defeat		Yes	Decided	River strong obstacle; ground on far side dominated British position and barred advance of main body.	"Most remarkable feat of Palestine campaign." (O.H.W., Egypt and Palestine, Volume I, page 237)
		Discipline (?)	Yes	Probably	Yes	To secure heights prior to main daylight attack	A small attack to capture ground, the possession of which by the enemy would endanger the success of the daylight attack.
				Partial	Extremely tardy	To secure bridgehead and protect crossing of main body	Crossing was made second night after practically failure first night. Lack of surprise and swiftness of current were responsible for delayed success.
	Numerous rockets		Yes; in day- light	No	No	Enemy entrenched on commanding ground; open country between enemy and British positions	One company of four succeeded in capturing one fort, but withdrew due to lack of support; fort then captured by others, but not held as result of severe counterattack. Failure was caused by disorganization and confusion incidental to long approach march.
					No	To take advantage of enemy thought to be demoralized	Considerable confusion due to mingling of units, resulting from delayed messages. Attack was called off immediately after launched.
		Morale probably poor; tired troops	No	At most partial only	No	Delay in arrival of 84th Brigade caused postponed day counterattack to become night counterattack.	All success and heavy losses, as attack was made in haste and with totally inadequate artillery backing.
		Troops weary	Yes	No	No	Enemy had perfect observation, excellent cover; attack at night to reduce losses	A deserter informed the Germans of a contemplated counterattack to recover ground lost the day before. Excellent example of the cost of not having surprise. Enemy placed heavy artillery on assembly areas and lines of departure.
				No	No	Continuation of day attack on Sugar Loaf which had only been partially successful	Three brigades planned to make attack. Orders cancelling this operation issued at 8:20 PM reached all but two companies of 58th Battalion, who made the assault and were practically annihilated by machine-gun fire.
		Discipline excellent; morale apparently good	None nec- essary	No	Almost total failure	Position very strong and of great impor- tance. Crest provided all-around obser- vation.	Failure due to avoidable mistakes. Because of limited time, troops were forced to assemble in the open without protection of artillery and to advance 400-500 yards to an enemy who expected them.
		Fresh troops; high morale		No	Trivial	Enemy position strong; previous night attacks had been quite successful.	Short range of own artillery caused fire to be placed on assault troops, warn- ing enemy. Panicky new troops refused to support advanced units; veteran troops pushed forward to objective, but lost it due to lack of support.
				No	Failure	Enemy position strong; previous night attacks had been quite successful.	Delay in receipt of orders help up launching of assault; prior artillery fire warned enemy.
	Flares		Yes	No; detected while lying out	No	Daylight attack had failed.	Failed due to rain and weakness of attacking force. Sixth attack at Mouquet Farm
	Rockets			No; assem- bly seen by enemy	No	To gain small triangular salient preparatory to main attack next day	Orderly advance over No Man's Land; at wire received terrific rifle fire and shower of bombs. Lack of surprise caused failure.
	Flares			Evidently lacking	No	Not indicated.	A hastily ordered night attack calling for a complicated movement.
		Morale probably fair	No	Apparently not	Complete failure	Enemy held very strong, dominating ground.	A difficult plan resulting in considerable confusion. Own artillery fire on troops disorganized the operation.
					Cancelled	To exploit what was thought to be a suc- cessful day attack	Attack postponed to 10:30 PM and later until after midnight on protest of a bn. comdr. Div. comdr., on learning actual conditions at 8:30 AM, can- celled attack. The day attack had been a complete failure; the units for night attack found front line in chaotic condition with all routes congested.
				Yes	No	To secure dominating ridge by surprise; Turkish position extremely strong	Failure caused more by terrain than by enemy; loss of direction and result- ing delays costly. Accidents of operation responsible for failure.
				Probably very little	No	Day attack failed; necessary to cross open, exposed ground; enemy position strong; good observation	Failure largely due to difficulty in transport. Roads almost impassable. Artillery left behind. British decidedly superior in numbers
	Flares		Yes	No	No	Enemy position strong; Tigress River on right flank and swamp on left. Previous day attack had failed.	Preparation made in considerable detail. Failure due in all probability to lack of surprise; great confusion; some troops panicky and out of control. Attack and preparation for further advance to relieve Kut.
		Morale probably low		No	No	River crossing; enemy bank organized	Example of attempted night attack to cross river with but meager prepa- ration and extremely limited reconnaissance. Lacking surprise, it failed.
		Morale probably low	Yes	Apparently not	Partial success	River crossing; attack previous night had failed.	Narrow front and lack of surprise in attempt to cross difficult obstacle made failure almost certain if enemy resisted. Although attack failed, sixty men dug in on enemy side of river.
		Discipline good		Unable to cross stream and make contact	No	Enemy prepared to defend crossings; ground open; daylight movement difficult. (See case 15.)	Orders issued after 3:00 PM at earliest. Inadequate reconnaissance and delayed preparation caused failure. Stream 50-60 feet wide and only 30 feet of engineer bridging material.
		Discipline good			Postponed	Daylight attack had failed; enemy fire had prevented success.	Attack postponed on account of lack of reconnaissance and to give time for preparation. Bn. comdr. did not receive orders until 8:50 PM. On his protest and with consent of div. comdr., the attack was postponed.
	Searchlights	Discipline good	Yes	No	No	(See case 16.)	Attack lacked surprise. Enemy had probably observed laying of tele- phone and digging of communication trenches. Prisoners captured prior to attack knew about proposed attack.
	Probably (used the 24th)	Discipline good	Yes	Probably not	No	Preliminary to further attack. (See cases 16 and 48.)	Marked by confusion and misunderstanding. Orders issued for with- drawal based on lack of knowledge of real situation. Changes in plan added to confusion.